GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

STATE EMPLOYEES' RETIREMENT SYSTEM OF ILLINOIS

2016 Experience Review

For the Years July 1, 2012, to June 30, 2015

GRS
Gabriel Roeder Smith & Company
Consultants & Actuaries
20 North Clark Street
Suite 2400
Chicago, IL 60602-5111
312.456.9800 phone
312.456.9801 fax
www.gabrielroeder.com

April 18, 2016

Board of Trustees
State Employees' Retirement System of Illinois
Springfield, IL

Subject: Experience Review Update for the Years July 1, 2012, to June 30, 2015

Dear Members of the Board:

At your request, we have performed a review of the actuarial assumptions used for the annual actuarial valuation of the State Employees' Retirement System of Illinois ("SERS" or "System"). The primary purpose of the study is to determine the continued appropriateness of the current actuarial assumptions by comparing actual experience to expected experience. Our study was based on census information for the period from July 1, 2012, to June 30, 2015, as provided by SERS Staff.

Pursuant to Public Act 99-0232, effective August 3, 2015, the five state retirement systems shall conduct an actuarial experience study at least once every three years. The most recent experience study performed for SERS was for the four-year period ending June 30, 2013, with the actuarial assumptions adopted for use commencing with the June 30, 2014, actuarial valuation. In order to be compliant with Public Act 99-0232, the next experience study should be completed for the three-year period ending June 30, 2016. However, at your request, we have performed a modified experience review of a specific set of actuarial assumptions for the period from July 1, 2012, to June 30, 2015.

Our study includes a review of the experience associated with the following actuarial assumptions:

- Investment Return;
- Price Inflation;
- General Wage Increases and Payroll Growth;
- Mortality;
- Withdrawal for Tier Two Members; and
- Service Increases Relating to Unused Sick Leave and Optional Service Purchases.

Other demographic assumptions remain unchanged from the 2014 Experience Review.

Section I contains a summary of the results of the actuarial assumption review. The details of this analysis are set forth in Section II of this report. Section III contains the cost impact on the

Statutory contribution and funded status of the System as a result of the assumption modifications. Finally, Section IV contains a summary of all proposed assumptions.

The results of the experience study and recommended assumptions set forth in this report are based on the data and actuarial techniques and methods described above, and upon the provisions of SERS as of the most recent valuation date, June 30, 2015. This assumption review is based on data provided by (1) SERS for the annual actuarial valuations (2) the Illinois State Board of Investments ("ISBI") for the investment allocation and (3) ISBI's investment consultant, Meketa, for capital market assumptions. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. Based on these items, we certify these results to be true and correct.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law.

This report should not be relied on for any purpose other than the purpose stated.

Alex Rivera and Lance J. Weiss are Members of the American Academy of Actuaries, are independent of the plan sponsor and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

Respectfully submitted,

Gabriel, Roeder, Smith & Company

Alex Rivera, FSA, EA, MAAA
Senior Consultant

Lance J. Weiss, EA, MAAA, FCA
Senior Consultant

cc: David Kausch, Gabriel, Roeder, Smith & Company
Ryan Gundersen, Gabriel, Roeder, Smith & Company

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SECTION I

SUMMARY

STATE EMPLOYEES' RETIREMENT SYSTEM OF ILLINOIS
SUMMARY

Background

For any pension plan, actuarial assumptions are selected that are intended to provide reasonable estimates of future expected events, such as retirement, turnover and mortality. These assumptions, along with an actuarial cost method, the employee census data and the plan's provisions are used to determine the actuarial liabilities and overall actuarially determined funding requirements for the plan. The true cost to the plan over time will be the actual benefit payments and expenses required by the plan's provisions for the participant group under the plan. To the extent the actual experience deviates from the assumptions, experience gains and losses will occur. These gains (losses) then serve to reduce (increase) future actuarially determined contributions and increase (reduce) the funded ratio. The actuarial assumptions should be individually reasonable and consistent in the aggregate, and should be reviewed periodically to ensure that they remain appropriate. The actuarial cost method, for plan sponsors that use actuarially based funding policies, automatically adjusts contributions over time for differences between what is assumed and the true experience under the plan.

The Actuarial Standards Board ("ASB") provides guidance on measuring the costs of financing a retirement program through the following Actuarial Standards of Practices ("ASOP"):

(1) ASOP No. 4, *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions;*
(2) ASOP No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations;*
(3) ASOP No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations; and*
(4) ASOP No. 44, *Selection and Use of Asset Valuation Methods for Pension Valuations*.

The recommendations provided in this report are consistent with the preceding actuarial standards of practice.

A revised version of ASOP No. 27 was adopted in September 2013. The revised statement is applicable for valuations with a measurement date on or after September 30, 2014. Therefore, the first valuation for SERS that was impacted by the revised statement was the June 30, 2015, actuarial valuation.

In developing specific actuarial assumptions, ASOP No. 27 requires the actuary to follow a general process of:

(1) Identifying the components of the assumption;
(2) Evaluating relevant data;
(3) Considering specific and general factors related to the measurement; and
(4) Selecting a reasonable assumption.

In evaluating relevant data, the actuary should include appropriate recent and long-term historic data, but not give undue weight to recent experience.

Prior to the revision under ASOP No. 27, actuaries could use a "best-estimate" range to determine reasonableness for the assumption. Under the best-estimate standard, an assumption was deemed reasonable if it was selected from within a probabilistic range over which it was "more likely than not" to fall. However, under the revised ASOP No. 27, an assumption is considered reasonable if:

- It is appropriate for the purpose of the measurement;
- It reflects the actuary's professional judgment;
- It takes into account historical and current economic data that is relevant as of the measurement date;
- It reflects the actuary's estimate of future experience, the actuary's observation of the estimates inherent in market data or a combination thereof; and
- It has no significant bias (i.e., it is not significantly optimistic or pessimistic).

Thus, the economic assumption recommendation has moved from a range to a single estimate.

Also according to the revised ASOP No. 27, the actuary should recognize the uncertain nature of the items for which assumptions are selected and, as a result, may consider several different assumptions reasonable for a given measurement. The actuary should also recognize that different actuaries will apply different professional judgment and may choose different reasonable assumptions. As a result, a range of reasonable assumptions may develop both for an individual actuary and across actuarial practice.

Assumptions Reviewed During a Full Experience Study

The actuarial assumptions are usually divided into three categories:

1. Economic assumptions, which include:
    - Assumed rate of price inflation (as measured by the change in the Consumer Price Index for all urban consumers)
        - Underlies all other economic assumptions
        - Basis for cost-of-living increases for members hired on or after January 1, 2011
    - Assumed long-term rate of return on investments
        - Rate at which projected benefits are reduced to present value
        - Basis for reversionary annuity factors
    - General wage increases
        - Reflects inflationary forces on increases in pay for all members
    - Rate of payroll growth
        - Reflects expectation of growth in total payroll and affects level percent of pay statutory contribution

The economic assumptions are generally chosen on the basis of the actuary's expectations as to the effect of future economic conditions on the operation of the plan, with input from Staff, the Board and other investment advisors.

2. Demographic assumptions, which include the following rates:
    - Mortality
    - Retirement

- Withdrawal (other termination of employment)
- Disability

Demographic assumptions are generally based on the plan's own experience, taking into account emerging trends. Rates of salary increase due to promotion and longevity are also related to the plan's experience.

The accuracy and extent of the data is an important consideration in assessing demographic experience. The accuracy of the data for this study was good, but a very large amount of data is required to develop a credible mortality table. For this reason, we do not necessarily give full credibility to the mortality experience, but also factor in general experience among a wider universe of pension plans and retirement systems. The selection of a mortality table is based on trends in the plan's experience and general trends among pension plans and retirement systems.

3. Other methods and assumptions, which include the following:
    - Cost method
    - Amortization method
    - Asset smoothing method
    - Dependent assumptions
    - Pay increase and decrement timing assumptions
    - Assumptions on increases in service due to unused sick leave and optional service purchases

Key Findings and Recommendations

Gabriel, Roeder, Smith & Company ("GRS") has performed an experience study of the State Employees' Retirement System of Illinois ("SERS" or "System") for the period from July 1, 2012, to June 30, 2015. The primary purpose of the study was to compare the demographic and economic experience against the actuarial assumptions used in the annual actuarial valuations. Our study was based on the information used to perform the annual actuarial valuations for the period from July 1, 2012, to June 30, 2015.

Following is a summary of our key findings and recommendations:

- **Price inflation**: We recommend lowering the rate of price inflation from 3.00 percent to 2.75 percent.
- **Investment return**: The investment return assumption, net of investment expenses, compounded annually, is currently 7.25 percent. We recommend lowering the rate to 7.00 percent and annually monitoring the assumption for continued reasonability in the future.
- **Payroll growth assumption**: We recommend lowering the general payroll growth assumption from 3.50 percent to 3.25 percent, which reflects an underlying general price inflation assumption of 2.75 percent.
- **Turnover rates for Tier Two members:** We recommend maintaining the current service-based only rate structure. Separate Tier Two turnover rates are proposed for members eligible for Regular Formula benefits and Alternate Formula benefits. The proposed rates increase the expected turnover.

- **Mortality rates:** We recommend maintaining the current mortality table of 105 percent of the RP-2014 Combined Healthy Annuitant Mortality table, sex distinct, for the post-retirement mortality assumption; however, we recommend including projected generational mortality improvement. We recommend maintaining the pre-retirement mortality table assumption of a percent of the RP-2014 Total Employee Mortality table, sex distinct. We recommend changing the percent of the table to 75 percent for males and 95 percent for females and including projected generational mortality improvement. This new mortality table is a move from a single dimensional age-based table to a two dimensional table, where the year a person was born also influences their mortality rate. The specific mortality table recommendations and a more detailed description of the new mortality tables can be found in Section II
- **Service increases due to unused sick leave and optional service purchases:** We recommend introducing an assumption to the valuation to account for the increase in service of active members due to service credit given at retirement for unused sick leave and optional service purchases. We recommend increasing service for all current and future active members by 4.5 months.

The impact of adopting the recommended assumptions is summarized in the table below. The recommended assumptions increase the actuarial liability and contributions and decrease the funded ratio.

		Experience Study		
	Baseline Valuation	7.25% Discount Rate Changing Mortality Tables	7.25% Discount Rate Changing Mortality Tables and all Demographic Assumptions	7.00% Discount Rate Changing Mortality Tables and all Demographic Assumptions
Valuation Date:	June 30, 2015	June 30, 2015	June 30, 2015	June 30, 2015
Estimated Statutory Contributions for FY 2018:				
• Annual Amount	$ 2,056,953,668	$ 2,247,938,550	$ 2,302,911,644	$ 2,380,112,481
• Percentage of Covered Payroll	42.585%	46.529%	48.063%	49.674%
Estimated Annual Determined Contribution* (ADC) for FY 2018:				
• Annual Amount	$ 2,426,976,290	$ 2,617,429,256	$ 2,653,148,402	$ 2,750,221,842
• Percentage of Covered Payroll	50.245%	54.177%	55.372%	57.398%
Actuarial Information				
• Normal Cost Amount	$ 654,616,726	$ 709,888,891	$ 692,930,971	$ 737,597,398
• Actuarial Accrued Liability (AAL)				
Annuitants	$ 26,170,734,640	$ 27,389,312,208	$ 27,395,966,244	$ 28,110,322,121
Inactive Members	625,446,328	656,125,311	656,125,311	682,339,946
Active Members	13,947,229,249	14,748,319,820	14,921,841,785	15,637,074,235
Total	$ 40,743,410,217	$ 42,793,757,339	$ 42,973,933,340	$ 44,429,736,302
• Unfunded Actuarial Accrued Liability	$ 26,001,674,152	$ 28,052,021,274	$ 28,232,197,275	$ 29,688,000,237
• Funded Ratio based on AVA	36.18%	34.45%	34.30%	33.18%
• UAAL as % of Covered Payroll	583.82%	629.86%	633.91%	666.59%
• Funded Ratio based on MVA	37.45%	35.66%	35.51%	34.34%

** Normal Cost plus a 25-year level percent of capped payroll closed-period amortization of the Unfunded Accrued Liability.*

SECTION II

EXPERIENCE ANALYSIS

ECONOMIC ASSUMPTIONS

Economic assumptions reflect the effects of economic forces on the projections of retirement benefits payable from the plan and in the discounting of those benefits to present value.

These assumptions are based, at their core, on the assumed level of price inflation. Each economic assumption is then developed from expected spreads over price inflation. Since price inflation is relatively volatile and is subject to a number of influences not based on recent history, these assumptions are less reliable based on recent past experience than are the demographic assumptions.

The key economic assumptions are:

1. Assumed Rate of Inflation – The rate of price inflation (as measured by the Consumer Price Index for all Urban consumers) which underlies the remainder of the economic assumptions.
2. Assumed Rate of Investment Return – The rate at which projected future benefits under the system are reduced to present value.
3. Rate of General Annual Pay Increases – This reflects inflationary forces on increases in pay for individual members.

Inflation

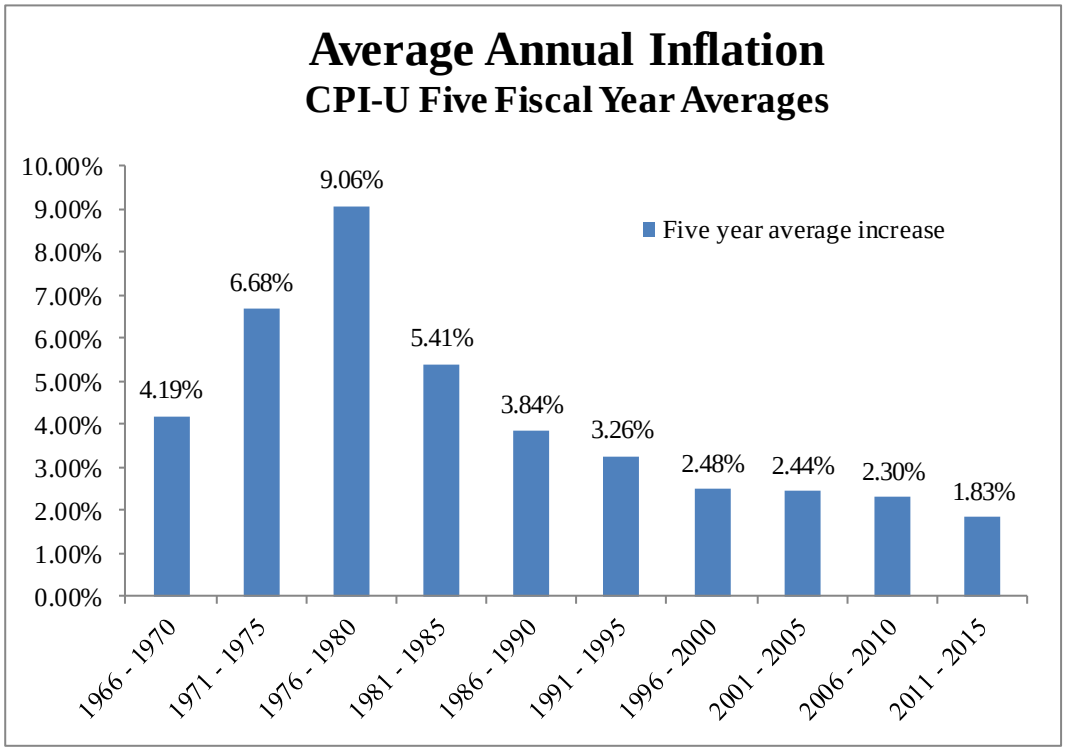
By "inflation," we mean price inflation, as measured by annual increases in the Consumer Price Index (CPI). This inflation assumption underlies all of the other economic assumptions we employ. It not only impacts investment return, but also salary increase rates and the payroll growth assumption. The current annual inflation assumption is 3.00 percent.

Over the five-year period from June 2010 through June 2015, the CPI-U has increased at an average rate of 1.83 percent. However, the assumed inflation rate is only weakly tied to past results.

The following table shows the average inflation over various periods, ending June 2015.

Fiscal Year	Annual Increase in CPI-U
2010-11	3.56%
2011-12	1.66%
2012-13	1.75%
2013-14	2.07%
2014-15	0.12%
3-Year Average	1.31%
5-Year Average	1.83%
10-Year Average	2.07%
20-Year Average	2.26%
25-Year Average	2.46%
30-Year Average	2.69%
40-Year Average	3.80%
50-Year Average	4.13%

The graph below shows the average inflation over 5-year periods over the last 50 years:



We surveyed the inflation assumption used by investment consulting firms. In our sample of eight firms, the inflation assumption ranged from 2.11 percent to 2.5 percent, with an average of 2.27 percent.

In the Social Security Administration's 2015 Trustees Report, the Office of the Chief Actuary is projecting a long-term average annual inflation rate of 2.7 percent under the intermediate cost assumption. (The inflation assumption is 3.4 percent and 2.0 percent, respectively, in the low cost and high cost projection scenarios.)

Therefore, we believe a reasonable long-term inflation assumption will likely fall in the range of 2.00 percent to 3.50 percent, although we recognize that inflation may fall outside this range over the next few years. We are recommending the inflation assumption be lowered from 3.00 percent to 2.75 percent. This is close to the average of 2.69 percent over the last 30 years and consistent with the assumption used by the SSA Office of the Chief Actuary for the intermediate cost projections.

Investment Return

ASOP 27

Actuaries are required to comply with Actuarial Standard of Practice No. 27 (ASOP 27) in setting economic assumptions for retirement plans, including the assumed investment return rate.

In a public retirement system like SERS, it is ultimately the Retirement Board's responsibility to approve the actuarial assumptions used in the actuarial valuations. It is the actuary's duty to provide the Board with information needed to make those decisions and to make recommendations to the

Board. Although the Board is the ultimate decision-making body, we are still bound by ASOP No. 27 in providing advice or recommendations to the Board.

According to the revised ASOP No. 27 applicable to valuations with a measurement date on or after September 30, 2014, each economic assumption selected by the actuary should be reasonable. For this purpose, an assumption is reasonable if it has the following characteristics:

- It is appropriate for the purpose of the measurement;
- It reflects the actuary's professional judgment;
- It takes into account historical and current economic data that is relevant as of the measurement date;
- It reflects the actuary's estimate of future experience, the actuary's observation of the estimates inherent in market data or a combination thereof; and
- It has no significant bias (i.e., it is not significantly optimistic or pessimistic).

Also according to the revised ASOP No. 27, the actuary should recognize the uncertain nature of the items for which assumptions are selected and, as a result, may consider several different assumptions reasonable for a given measurement. The actuary should also recognize that different actuaries will apply different professional judgment and may choose different reasonable assumptions. As a result, a range of reasonable assumptions may develop both for an individual actuary and across actuarial practice.

Real Return

The allocation of assets within the universe of investment options will significantly impact the overall performance. Therefore, it is meaningful to identify the range of expected returns based on the fund's targeted allocation of investments and an overall set of capital market assumptions.

Based on information provided by SERS and ISBI, following is a table with the System's current target asset allocation and capital market assumptions:

Asset Category	Current Target	Annualized Average Return	Annualized Standard Deviation
U.S. Equity	23%	9.5%	18.0%
Developed Foreign Equity	13%	10.1%	20.0%
Emerging Markets Equity	7%	14.0%	26.5%
Private Equity	10%	12.3%	24.0%
Intermediate Investment Grade Bonds	11%	3.7%	4.5%
Long-term Government Bond	3%	4.4%	12.5%
TIPS	5%	3.6%	7.5%
High Yield Bonds	3%	7.6%	12.5%
Bank Loans	3%	6.2%	10.0%
Emerging Market Debt	3%	6.7%	13.0%
Real Estate	11%	6.7%	12.5%
Infrastructure	5%	8.0%	16.0%
Hedge Fund	3%	6.2%	10.5%
Total	**100%**	**8.37%**	**12.9%**

Provided by ISBI's investment consultant, Meketa.

We also reviewed capital market assumptions developed and published by eight independent investment consulting firms.

These investment consulting firms periodically issue reports that describe their capital market assumptions; that is, their estimates of expected returns, volatility and correlations among the different asset classes. While some of these assumptions may be based upon historical analysis, many of these firms also incorporate forward looking adjustments to better reflect near-term and long-term expectations. The estimates for core investments (i.e., fixed income, equities and real estate) are generally based on anticipated returns produced by passive index funds.

Given the System's current target asset allocation and the capital market assumptions from the investment consultants, the development of the average nominal return, net of investment expenses, is provided in the following table:

Investment Consultant	Investment Consultant Expected One Year Nominal Return	Investment Consultant Inflation Assumption	Expected Real Return (2)–(3)	Actuary Inflation Assumption	Expected Nominal Return (4)+(5)	Investment Expenses	Expected Nominal Return Net of Expenses (6)-(7)		Standard Deviation of Expected Return (1-Year)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		(9)
1	5.76%	2.12%	3.63%	2.75%	6.38%	0.30%	6.08%		10.80%
2	6.90%	2.50%	4.40%	2.75%	7.15%	0.30%	6.85%		11.30%
3	6.97%	2.50%	4.47%	2.75%	7.22%	0.30%	6.92%		12.70%
4	7.13%	2.25%	4.88%	2.75%	7.63%	0.30%	7.33%		12.70%
5	7.28%	2.20%	5.08%	2.75%	7.83%	0.30%	7.53%		11.70%
6	7.23%	2.11%	5.12%	2.75%	7.87%	0.30%	7.57%		11.90%
7	7.52%	2.26%	5.26%	2.75%	8.01%	0.30%	7.71%		11.40%
8	8.14%	2.20%	5.94%	2.75%	8.69%	0.30%	8.39%		13.00%
Average	**7.11%**	**2.27%**	**4.85%**	**2.75%**	**7.60%**	**0.30%**	**7.30%**		**11.94%**

**Average real rate of return is 4.55% net of investment expenses.*
***Based on arithmetic average.*

Investment Consultant	Investment Consultant Expected One Year Nominal Return	Investment Consultant Inflation Assumption	Expected Real Return (2)–(3)	Actuary Inflation Assumption	Expected Nominal Return (4)+(5)	Investment Expenses	Expected Nominal Return Net of Expenses (6)-(7)		Standard Deviation of Expected Return (1-Year)
Meketa	8.37%	2.50%	5.87%	2.75%	8.62%	0.30%	8.32%		12.85%

Information based on ISBI's capital market assumptions.

Based on each firm's assumptions, we estimated the expected real return of SERS' portfolio (col. (4)). Next, based on the actuary's recommended inflation and investment expense assumption, we estimated the nominal return net of investment expenses (col. (8)). As the table shows, the average one-year nominal return (net of expenses) of the eight firms is 7.30 percent, which is 0.05 percentage points higher than the current assumption of 7.25 percent. The expected one-year nominal return, based on capital market assumptions provided by ISBI's investment consultant, produced 8.32 percent.

In addition to examining the expected one-year return, it is important to review anticipated volatility of the investment portfolio and understand the range of long-term net return that could be expected to be produced by the investment portfolio. Therefore, the following table provides the 25th, 50th and 75th percentiles of the 20-year geometric average of the expected nominal return, net of expenses, as well as the probability of exceeding the current 7.25 percent assumption.

Investment Consultant	Distribution of 20-Year Average Geometric Net Nominal Return			Probability of exceeding	Probability of exceeding
	25th	50th	75th	7.00%	7.25%
(1)	(2)	(3)	(4)	(6)	(6)
1	3.93%	5.53%	7.15%	27.0%	23.7%
2	4.57%	6.25%	7.95%	38.2%	34.5%
3	4.28%	6.16%	8.07%	38.3%	34.9%
4	4.68%	6.56%	8.48%	43.9%	40.4%
5	5.16%	6.89%	8.64%	48.3%	44.4%
6	5.13%	6.90%	8.70%	48.5%	44.8%
7	5.40%	7.09%	8.81%	51.4%	47.5%
8	5.68%	7.60%	9.56%	58.3%	54.8%
Average	**4.85%**	**6.62%**	**8.42%**	**44.2%**	**40.6%**

Investment Consultant	Distribution of 20-Year Average Geometric Net Nominal Return			Probability of exceeding	Probability of exceeding
	25th	50th	75th	7.00%	7.25%
Meketa	5.64%	7.54%	9.48%	57.6%	54.1%

Information based on ISBI's capital market assumptions.

As the analysis shows, there is a 50 percent likelihood that the 30-year average net real return will be between 4.85 percent and 8.42 percent. One of the capital market assumptions provided by the investment consulting firms indicate there is more than a 50 percent chance of exceeding the current assumption of 7.25 percent over the next 20 years. Furthermore, the average results of all eight firms indicate there is about a 40.6 percent chance that the System will produce an average return that exceeds 7.25 percent over the next 20 years and a 44.2 percent chance that the system will produce an average return that exceeds 7.00 percent over the next 20 years. Based on capital market assumptions provided by ISBI's investment consultant, there is 58 percent chance the return exceeds 7.00 percent.

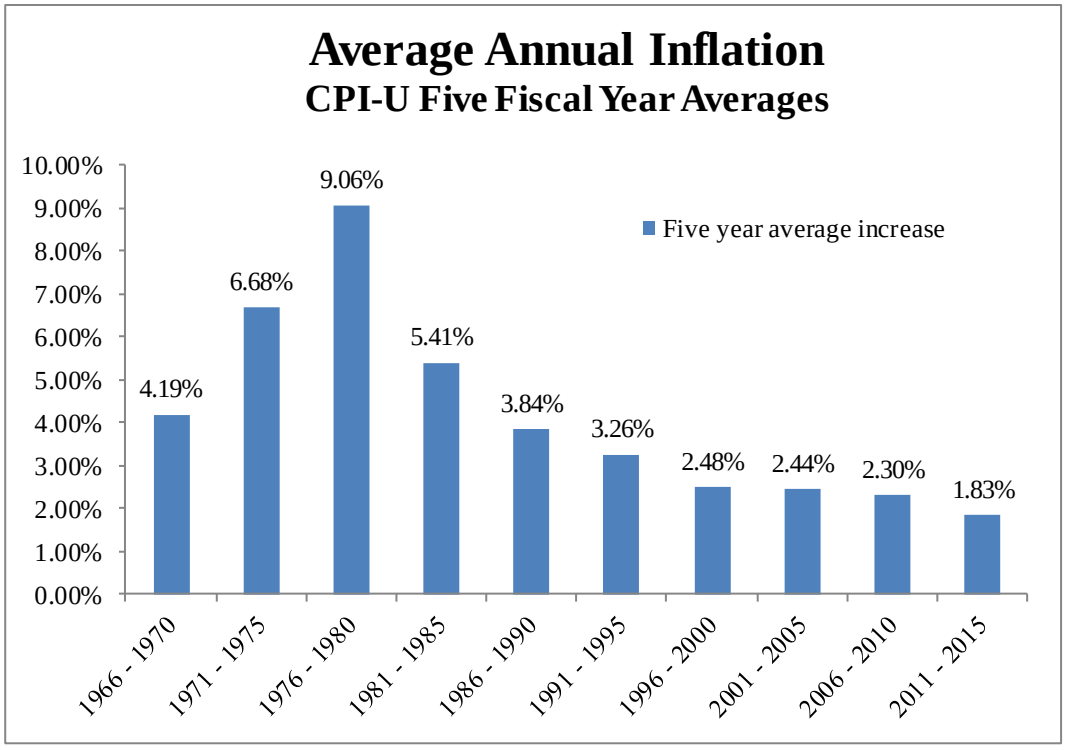
Recommendation

Based on our analysis of the expected investment return and the current target asset allocation, we recommend lowering the long-term investment return assumption of 7.25 percent to 7.00 percent. We recommend that the assumed investment return be reviewed before the next experience review if warranted. Also, any significant changes in the target asset allocation may warrant an additional review of the rate of return assumption. We believe that this assumption can be supported by the revised Actuarial Standard of Practice No. 27. Under the Standard, all economic assumptions must be selected to be consistent with the purpose of the measurement. The purpose of the measurement is to determine the contribution rate which will lead to the accumulation of assets to pay benefits when due.

The assumption of 7.00 percent is below the arithmetic mean of 7.30 percent as disclosed above. Section 3.8.3 j. of the revised Actuarial Standard of Practice No. 27 states that "the use of a forward looking expected arithmetic return as an investment return assumption will produce a mean accumulated value."

General Wage Increase and Payroll Growth Assumption

The SERS assumptions make a distinction between price inflation (currently assumed to be 3.00 percent) and the rate of payroll growth (currently assumed to be 3.50 percent). The National Average Earnings ("NAE") series published in connection with the operation of the Social Security program is a useful proxy for measuring general changes in wage levels in the economy. Increases in NAE typically exceed increases in the Consumer Price Index ("CPI"), although there are periods where the patterns are reversed. The economic argument for wages exceeding prices in the long run is that CPI is based on the prices of a fixed basket of goods whereas wages reflect innovations, real productivity growth, labor supply and demand and other factors in addition to pure price inflation.



Over the last 63 years, NAE has exceeded CPI 42 times and the averages over that period are 4.6 percent for NAE and 3.6 percent for CPI. The last 25 years has had fewer cases of high inflation, but the distinction between prices and wages still appears. Over the last 25 years, the average increase in NAE is 3.4 percent and the average increase in CPI is 2.6 percent.

As with the investment return assumption, past experience does not dictate future expectations. Current expectations are mixed on whether price and wage inflation will remain low in the short term, particularly due to the aftereffects of recent federal government spending. For a long-term view, the 2015 Annual Report from the Trustees of the Social Security Administration (SSA) assumes an

intermediate average CPI of 2.7 percent over the next 75 years and an intermediate growth assumption for average wages in covered employment of 3.9 percent. The SSA report provides alternate "Low-cost" assumptions of 3.4 percent CPI/5.2 percent wages and "High-cost" assumptions of 2.0 percent CPI/2.6 percent wages.

With ongoing pressure on the ability of states to sustain across the board increases in wages consistent with historical norms, we do not believe there is justification to increase the assumption for productivity increases; in other words, to increase the assumed gap between price increase and wage growth. We recommend maintaining the current assumption for productivity increases of 0.50 percent until further review of all salary increases which will occur during the next experience study for the three-year period ending June 30, 2016. Combining this recommendation with our recommended 2.75 percent inflation assumption, implies a wage growth assumption of 3.25 percent. These assumptions are summarized below:

	Present Assumption
Price Inflation	2.75%
Productivity Increases	0.50%
Total Wage Inflation	3.25%

STATE EMPLOYEES' RETIREMENT SYSTEM OF ILLINOIS
DEMOGRAPHIC ASSUMPTIONS

The following pages present the analysis of the demographic assumptions. These assumptions include assumed rates of mortality among active and retired members and turnover patterns of Tier 2 members. These patterns generally take the form of tables of rates of incidence based on age and/or years of service. Other demographic assumptions remain unchanged and continue to be based on the 2014 Experience Review.

Absent any significant changes in benefit provisions, these assumptions generally exhibit reasonable consistency over periods of time. As a result, each demographic assumption is normally reviewed by relating actual experience to that assumed over the recent past.

The analysis of demographic experience is conducted for each assumption using a measure known as the "Actual to Expected (A/E) Ratio." The A/E Ratio is simply the ratio of the actual number of occurrences of the event to which the assumption applies (e.g., deaths or retirements) to the number expected to occur in accordance with the assumption. An A/E Ratio of 1.00 indicates that the assumption precisely predicted the number of occurrences. An A/E Ratio exceeding 1.00 indicates that the assumption underestimated actual experience. Conversely, an A/E Ratio lower than 1.00 indicates that the assumption overestimated actual experience.

These are statistical analyses. As a result, there are several considerations we must keep in mind as we analyze these ratios:

1. An actuarial assumption is designed to reflect average experience over long periods of time (30 - 50 years). As a result:
    a. A deviation between actual experience and that expected from our assumptions for one or two years does not necessarily mean that the assumption should be changed.
    b. A change in actuarial assumption should result if the experience indicates a consistent pattern which is different from that assumed over a period of years.
2. The larger the amount of data available, the more reliable the statistics used in the analysis. As a result:
    a. Events that occur with great frequency (e.g., general employment turnover) are more credibly predictable than those occurring less frequently (e.g., active member death).
    b. In all cases, data covering the entire study period produce more credible results than data for a single year.
    c. Year-by-year experience is helpful only in identifying trends and determining whether the three-year data is truly reflective of the entire period.

This analysis is based on the valuation data for the three-year period from July 1, 2012, to June 30, 2015.

Tier Two Turnover

Currently, turnover rates are based solely on service. Based on our analysis, no credible patterns of age based terminations were present; therefore, we are recommending the service based structure.

Turnover experience during the last three years was considered in the analysis shown on the following pages. The "Exposure" column shows the number of employees at various years of service throughout the experience period.

The "Turnover" column shows the number of employees at various years of service that have left active status for reasons other than retirement and death. This includes members moving to inactive status as well as members terminating and receiving a refund of contributions.

This assumption was developed for Tier Two only, with the analysis of Tier One members set to occur during the next experience study.

The tables and graphs on the following pages show termination experience by service.

- Table and Graph I(a) – Termination Experience by Service – Tier Two Regular Formula Male Members
- Table and Graph I(b) – Termination Experience by Service – Tier Two Regular Formula Female Members
- Table and Graph I(c) – Termination Experience by Service – Tier Two Alternate Formula Male Members
- Table and Graph I(d) – Termination Experience by Service – Tier Two Alternate Formula Female Members

Table I(a)

Termination Experience by Service – Tier Two Regular Formula Male Members

	Actual Experience			Current Assumptions			Proposed Assumptions		
Service	Exposures	Turnover	Actual Rate	Expected Turnover	Assumed Rate	Actual / Expected	Expected Turnover	Proposed Rate	Actual / Expected
0	3,385	987	29.16%	779	23.00%	1.3	914	27.00%	1.1
1	4,265	601	14.09%	512	12.00%	1.2	597	14.00%	1.0
2	2,323	189	8.14%	221	9.50%	0.9	186	8.00%	1.0
3	1,111	89	8.01%	78	7.00%	1.1	89	8.00%	1.0
4	230	13	5.65%	14	6.25%	0.9	14	6.25%	0.9
5	7	0	0.00%	0	4.25%	0.0	0	5.00%	0.0
6	0	0	0.00%	0	4.25%	0.0	0	4.50%	0.0
7	0	0	0.00%	0	3.50%	0.0	0	4.00%	0.0
8	0	0	0.00%	0	3.00%	0.0	0	3.50%	0.0
9	0	0	0.00%	0	2.50%	0.0	0	3.00%	0.0
10	0	0	0.00%	0	2.50%	0.0	0	2.50%	0.0
11	0	0	0.00%	0	2.00%	0.0	0	2.00%	0.0
12	0	0	0.00%	0	2.00%	0.0	0	2.00%	0.0
13	0	0	0.00%	0	2.00%	0.0	0	2.00%	0.0
14	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
15	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
16	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
17	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
18	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
19	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
20	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
21	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
22	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
23	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
24	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
25	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
26	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
27	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
28	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
29	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
30+	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
	11,321	**1,879**	**16.60%**	**1,604**	**14.17%**	**1.2**	**1,800**	**15.90%**	**1.0**

Graph I(a)

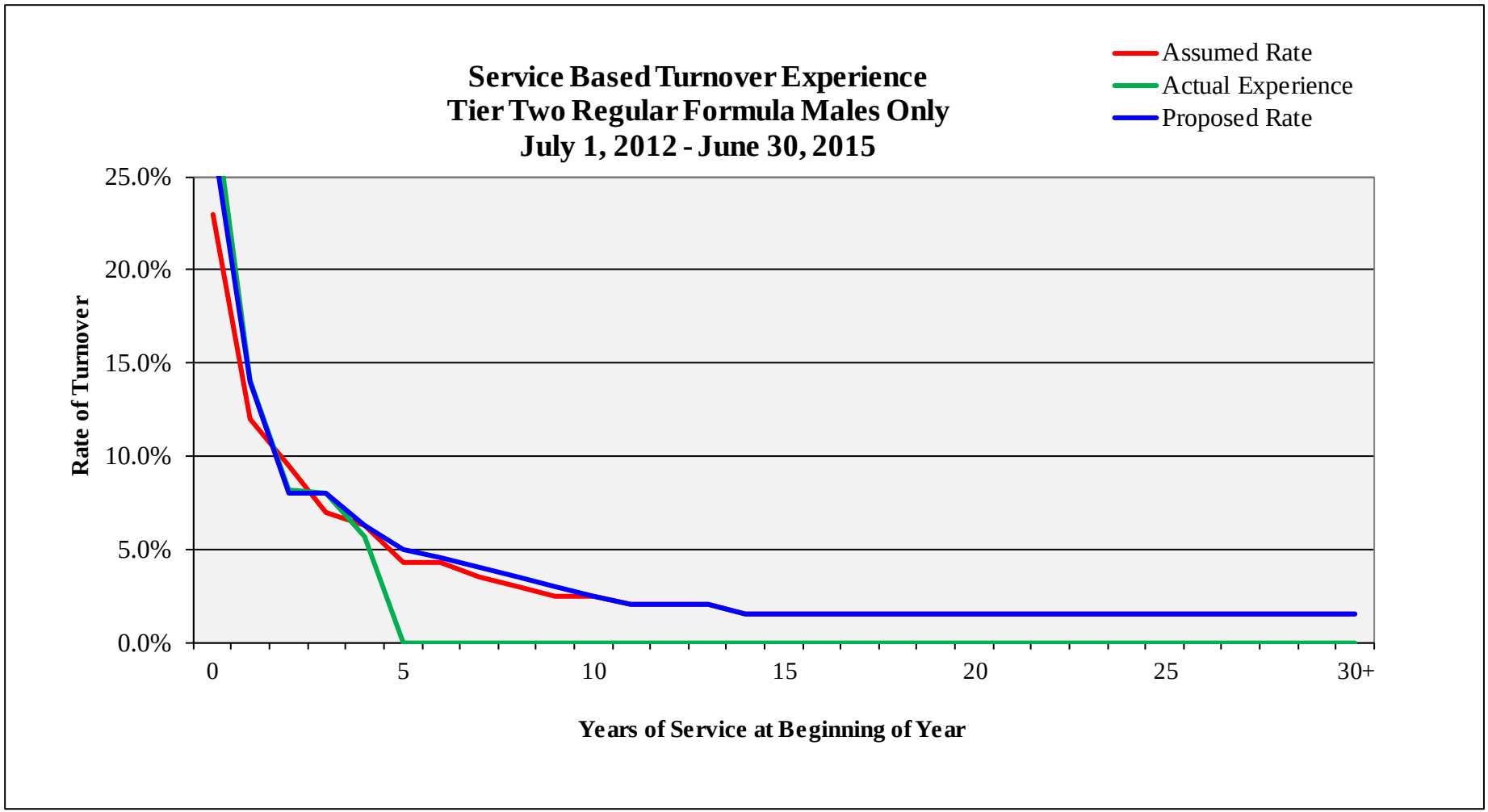

Service Based Turnover Experience
Tier Two Regular Formula Males Only
July 1, 2012 - June 30, 2015
Assumed Rate
Actual Experience
Proposed Rate
Rate of Turnover
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
0
5
10
15
20
25
30+
Years of Service at Beginning of Year

Table I(b)

Termination Experience by Service – Tier Two Regular Formula Female Members

	Actual Experience			Current Assumptions			Proposed Assumptions		
Service	Exposures	Turnover	Actual Rate	Expected Turnover	Assumed Rate	Actual / Expected	Expected Turnover	Proposed Rate	Actual / Expected
0	2,813	706	25.10%	647	23.00%	1.1	703	25.00%	1.0
1	3,595	573	15.94%	431	12.00%	1.3	575	16.00%	1.0
2	1,666	163	9.78%	142	8.50%	1.2	167	10.00%	1.0
3	888	91	10.25%	58	6.50%	1.6	71	8.00%	1.3
4	160	13	8.13%	8	5.00%	1.6	11	7.00%	1.2
5	0	0	0.00%	0	4.75%	0.0	0	6.00%	0.0
6	0	0	0.00%	0	3.50%	0.0	0	5.50%	0.0
7	0	0	0.00%	0	3.50%	0.0	0	5.00%	0.0
8	0	0	0.00%	0	3.00%	0.0	0	4.50%	0.0
9	0	0	0.00%	0	2.50%	0.0	0	4.00%	0.0
10	0	0	0.00%	0	2.50%	0.0	0	3.50%	0.0
11	0	0	0.00%	0	2.00%	0.0	0	2.50%	0.0
12	0	0	0.00%	0	2.00%	0.0	0	2.00%	0.0
13	0	0	0.00%	0	2.00%	0.0	0	2.00%	0.0
14	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
15	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
16	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
17	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
18	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
19	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
20	0	0	0.00%	0	1.00%	0.0	0	1.50%	0.0
21	0	0	0.00%	0	1.00%	0.0	0	1.50%	0.0
22	0	0	0.00%	0	1.00%	0.0	0	1.50%	0.0
23	0	0	0.00%	0	1.00%	0.0	0	1.50%	0.0
24	0	0	0.00%	0	1.00%	0.0	0	1.50%	0.0
25	0	0	0.00%	0	1.00%	0.0	0	1.50%	0.0
26	0	0	0.00%	0	1.00%	0.0	0	1.50%	0.0
27	0	0	0.00%	0	1.00%	0.0	0	1.50%	0.0
28	0	0	0.00%	0	1.00%	0.0	0	1.50%	0.0
29	0	0	0.00%	0	1.00%	0.0	0	1.50%	0.0
30+	0	0	0.00%	0	1.00%	0.0	0	1.50%	0.0
	9,122	**1,546**	**16.95%**	**1,286**	**14.09%**	**1.2**	**1,527**	**16.74%**	**1.0**

Graph I(b)

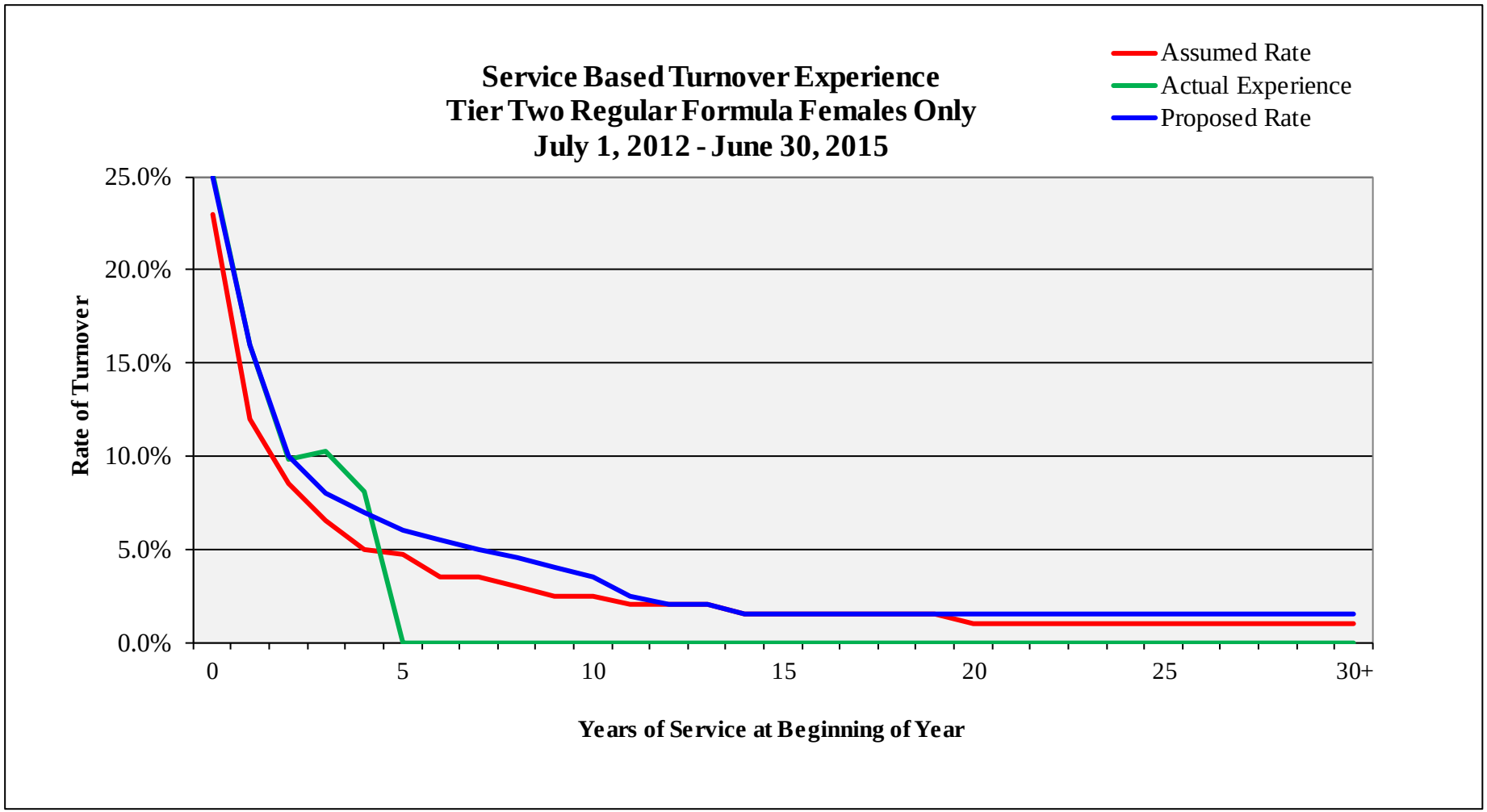

Service Based Turnover Experience
Tier Two Regular Formula Females Only
July 1, 2012 - June 30, 2015
Assumed Rate
Actual Experience
Proposed Rate
Rate of Turnover
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
0
5
10
15
20
25
30+
Years of Service at Beginning of Year

Table I(c)

Termination Experience by Service – Tier Two Alternate Formula Male Members

	Actual Experience			Current Assumptions			Proposed Assumptions		
Service	Exposures	Turnover	Actual Rate	Expected Turnover	Assumed Rate	Actual / Expected	Expected Turnover	Proposed Rate	Actual / Expected
0	16	2	12.50%	1	3.25%	3.8	1	5.00%	2.5
1	65	2	3.08%	2	3.25%	0.9	2	3.50%	0.9
2	46	0	0.00%	1	3.25%	0.0	2	3.50%	0.0
3	27	0	0.00%	1	2.00%	0.0	1	2.25%	0.0
4	1	0	0.00%	0	1.75%	0.0	0	2.00%	0.0
5	0	0	0.00%	0	1.75%	0.0	0	2.00%	0.0
6	0	0	0.00%	0	1.75%	0.0	0	2.00%	0.0
7	0	0	0.00%	0	1.75%	0.0	0	2.00%	0.0
8	0	0	0.00%	0	1.50%	0.0	0	1.75%	0.0
9	0	0	0.00%	0	1.50%	0.0	0	1.75%	0.0
10	0	0	0.00%	0	1.50%	0.0	0	1.75%	0.0
11	0	0	0.00%	0	1.25%	0.0	0	1.50%	0.0
12	0	0	0.00%	0	1.25%	0.0	0	1.50%	0.0
13	0	0	0.00%	0	1.00%	0.0	0	1.25%	0.0
14	0	0	0.00%	0	1.00%	0.0	0	1.25%	0.0
15	0	0	0.00%	0	1.00%	0.0	0	1.00%	0.0
16	0	0	0.00%	0	1.00%	0.0	0	1.00%	0.0
17	0	0	0.00%	0	1.00%	0.0	0	1.00%	0.0
18	0	0	0.00%	0	1.00%	0.0	0	1.00%	0.0
19	0	0	0.00%	0	1.00%	0.0	0	1.00%	0.0
20	0	0	0.00%	0	1.00%	0.0	0	1.00%	0.0
21	0	0	0.00%	0	1.00%	0.0	0	1.00%	0.0
22	0	0	0.00%	0	1.00%	0.0	0	1.00%	0.0
23	0	0	0.00%	0	1.00%	0.0	0	1.00%	0.0
24	0	0	0.00%	0	1.00%	0.0	0	1.00%	0.0
25	0	0	0.00%	0	1.00%	0.0	0	1.00%	0.0
26	0	0	0.00%	0	1.00%	0.0	0	1.00%	0.0
27	0	0	0.00%	0	1.00%	0.0	0	1.00%	0.0
28	0	0	0.00%	0	1.00%	0.0	0	1.00%	0.0
29	0	0	0.00%	0	1.00%	0.0	0	1.00%	0.0
30+	0	0	0.00%	0	1.00%	0.0	0	1.00%	0.0
	155	**4**	**2.58%**	**5**	**3.03%**	**0.9**	**5**	**3.43%**	**0.8**

Graph I(c)

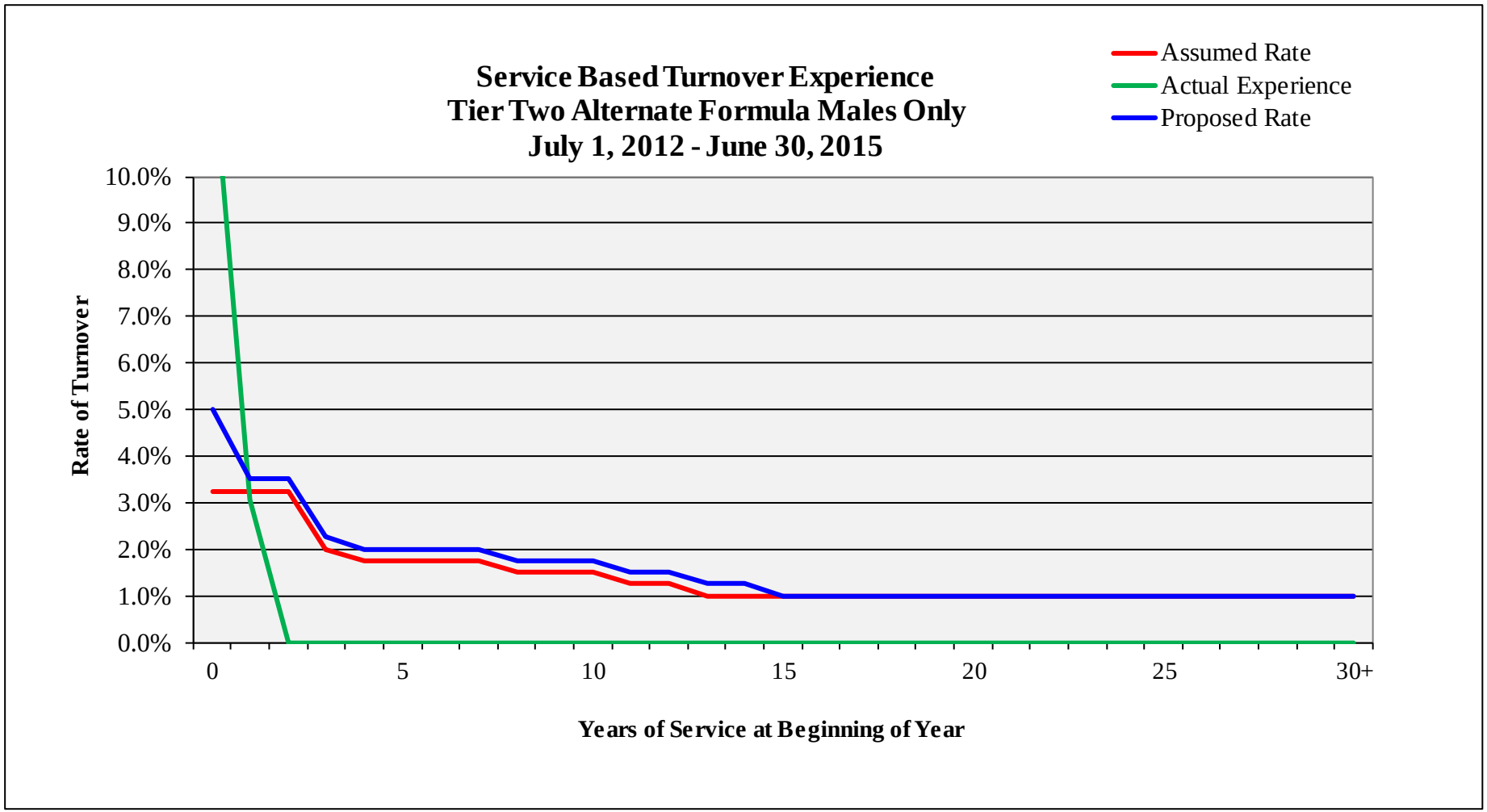
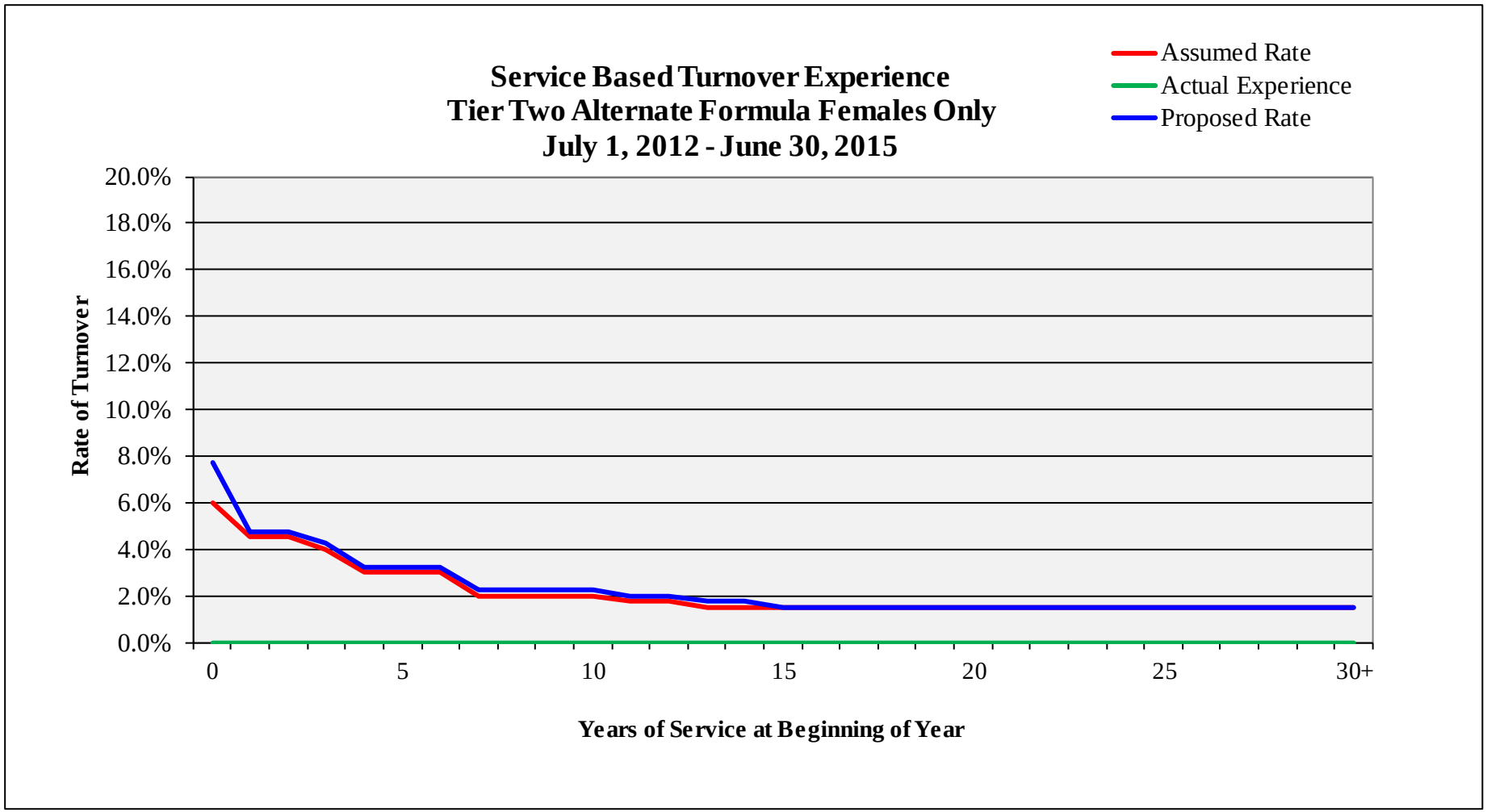

Service Based Turnover Experience
Tier Two Alternate Formula Males Only
July 1, 2012 - June 30, 2015
Assumed Rate
Actual Experience
Proposed Rate
Rate of Turnover
10.0%
9.0%
8.0%
7.0%
6.0%
5.0%
4.0%
3.0%
2.0%
1.0%
0.0%
0
5
10
15
20
25
30+
Years of Service at Beginning of Year

Table I(d)

Termination Experience by Service – Tier Two Alternate Formula Female Members

	Actual Experience			Current Assumptions			Proposed Assumptions		
Service	Exposures	Turnover	Actual Rate	Expected Turnover	Assumed Rate	Actual / Expected	Expected Turnover	Proposed Rate	Actual / Expected
0	6	0	0.00%	0	6.00%	0.0	0	7.75%	0.0
1	15	0	0.00%	1	4.50%	0.0	1	4.75%	0.0
2	7	0	0.00%	0	4.50%	0.0	0	4.75%	0.0
3	2	0	0.00%	0	4.00%	0.0	0	4.25%	0.0
4	0	0	0.00%	0	3.00%	0.0	0	3.25%	0.0
5	0	0	0.00%	0	3.00%	0.0	0	3.25%	0.0
6	0	0	0.00%	0	3.00%	0.0	0	3.25%	0.0
7	0	0	0.00%	0	2.00%	0.0	0	2.25%	0.0
8	0	0	0.00%	0	2.00%	0.0	0	2.25%	0.0
9	0	0	0.00%	0	2.00%	0.0	0	2.25%	0.0
10	0	0	0.00%	0	2.00%	0.0	0	2.25%	0.0
11	0	0	0.00%	0	1.75%	0.0	0	2.00%	0.0
12	0	0	0.00%	0	1.75%	0.0	0	2.00%	0.0
13	0	0	0.00%	0	1.50%	0.0	0	1.75%	0.0
14	0	0	0.00%	0	1.50%	0.0	0	1.75%	0.0
15	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
16	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
17	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
18	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
19	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
20	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
21	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
22	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
23	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
24	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
25	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
26	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
27	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
28	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
29	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
30+	0	0	0.00%	0	1.50%	0.0	0	1.50%	0.0
****	**30**	**0**	**0.00%**	**1**	**4.77%**	**0.0**	**2**	**5.32%**	**0.0**

Graph I(d)


Service Based Turnover Experience
Tier Two Alternate Formula Females Only
July 1, 2012 - June 30, 2015
Assumed Rate
Actual Experience
Proposed Rate
Rate of Turnover
20.0%
18.0%
16.0%
14.0%
12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
0
5
10
15
20
25
30+
Years of Service at Beginning of Year

Mortality

Post-retirement mortality is an important component in cost calculations and should be updated periodically to reflect current and expected future longevity improvements. Pre-retirement mortality is a relatively minor component in cost calculations. The frequency of pre-retirement deaths is so low that mortality assumptions based on actual experience can only be produced for very large retirement systems.

The trend of mortality improvement has been a long and relatively constant one in the United States over the past century. While most experts agree that overall mortality will improve in the near future, there are differing opinions on the long-term trend in mortality improvement. In order to allow for expected future mortality improvements, we recommend adopting generational mortality tables based on the mortality tables recently released by the Society of Actuaries ("SOA") in which mortality rates are projected to improve based on birth year.

We reviewed the mortality experience separately for active members and service retirees during the three-year study period. The results shown on the following pages indicate that there were more deaths than expected under the current assumption.

Retirees

We recommend maintaining the current post-retirement mortality table of 105 percent of the RP-2014 Combined Healthy Annuitant Mortality table, sex distinct; however, we recommend including generational mortality improvements using the MP-2014 2-dimensional mortality improvement scales recently released by the SOA. This assumption provides a provision for future mortality improvements.

Active Participants

We recommend maintaining the current pre-retirement mortality table of a percent of the RP-2014 Total Employee Mortality table, sex distinct. We recommend changing the percent of the table to 75 percent for males and 95 percent for females and including generational mortality improvements using the MP-2014 2-dimensional mortality improvement scales recently released by the SOA. This assumption provides a provision for future mortality improvements. Also, while not directly reviewed in this experience study, we recommend maintaining the assumption that five percent of deaths among active employees are assumed to be in the performance of their duty.

A Note about Mortality Rates

The recommended mortality assumptions include generational mortality improvements, which means that the probability of a 60-year-old retired male dying in any particular year is higher for a 60-year old born in 1954 than a 60-year old born in 1994.

The use of generational mortality tables is an emerging trend in the actuarial industry, and is based on the assumption that life expectancy increases from generation to generation. Simply put, this means that the life expectancy of someone born in 1994 is greater than that of someone born in 1954.

STATE EMPLOYEES' RETIREMENT SYSTEM OF ILLINOIS
MORTALITY ASSUMPTIONS

Adopting a generational mortality table tends to increase liabilities, as future increases in life expectancy imply longer payment of retirement benefits. Should the assumption of increased life expectancy prove true, actuarial valuations that continue to use static mortality tables may be required to update their tables to reflect the improved life expectancy, resulting in liability increases in the future. To the extent that future mortality improvements can be reflected in a current valuation, retirement systems can begin to fund for the increased liabilities, thereby reducing (or eliminating) future contribution rate increases that would eventually occur with the use of static tables.

Critics of generational mortality tables point to recent trends in declining health in the United States, such as increases in the incidence of childhood obesity and diabetes, as evidence against the premise of continued mortality improvements in the future.

We believe that the recommended mortality tables contain a sufficient level of conservatism to cover any increases in life expectancy in the near future. We will continue to monitor the use and acceptance of generational mortality tables by public retirement systems and keep the Board apprised of emerging trends.

The following tables and graphs contain the mortality experience for the experience study period:

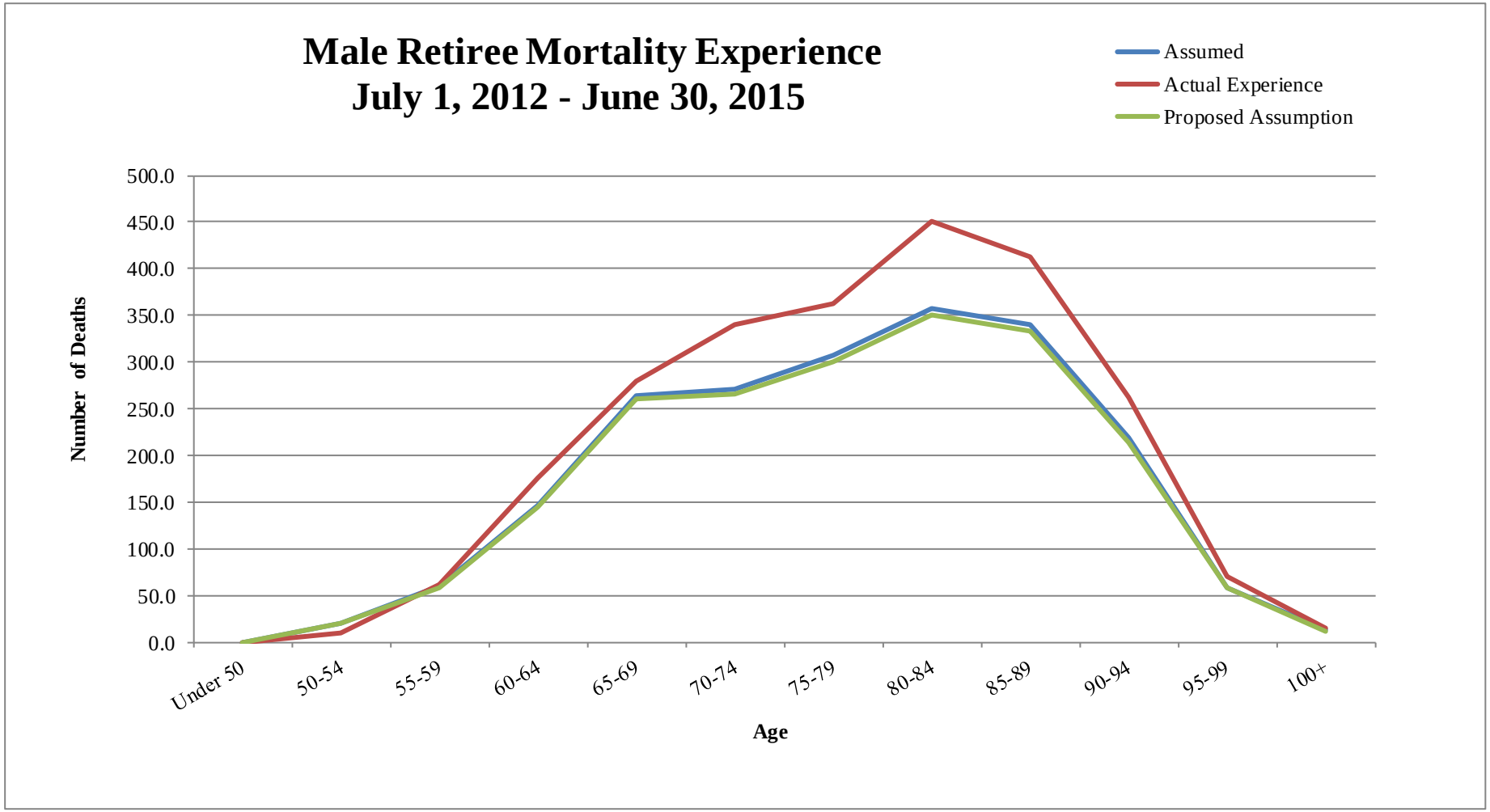
- Table and Graph II(a) – Post-Retirement Mortality Experience
- Table and Graph II(b) – Pre-Retirement Mortality Experience

Table II(a)

Post-Retirement Mortality Experience

Male Service Retiree Mortality Experience									
	Actual Experience			Current Assumptions			Proposed Assumptions		
Age	Exposures	Deaths	Actual Rate	Expected Deaths	Assumed Rate	Actual / Expected	Expected Deaths	Proposed Rate	Actual / Expected
Under 50	0	0	0.000%	0		0.00	0		0.00
50-54	3,887	10	0.257%	20	0.514%	0.50	20	0.504%	0.51
55-59	8,558	61	0.713%	59	0.690%	1.03	58	0.682%	1.04
60-64	15,292	175	1.144%	146	0.953%	1.20	144	0.944%	1.21
65-69	19,478	279	1.432%	264	1.354%	1.06	260	1.336%	1.07
70-74	12,882	340	2.639%	270	2.099%	1.26	265	2.058%	1.28
75-79	8,945	362	4.047%	307	3.430%	1.18	300	3.356%	1.21
80-84	6,184	450	7.277%	358	5.791%	1.26	350	5.664%	1.28
85-89	3,395	412	12.135%	340	10.019%	1.21	333	9.809%	1.24
90-94	1,306	262	20.061%	218	16.718%	1.20	214	16.399%	1.22
95-99	230	70	30.435%	58	25.352%	1.20	57	24.956%	1.22
100+	37	14	37.838%	12	32.969%	1.15	12	32.553%	1.16
Totals	**80,194**	**2,435**	**3.036%**	**2,053**	**2.560%**	**1.19**	**2,015**	**2.512%**	**1.21**
Female Service Retiree Mortality Experience									
Under 50	1	0	0.000%	0	0.000%		0	0.217%	0.00
50-54	1,336	6	0.449%	5	0.341%	1.32	5	0.338%	1.33
55-59	6,421	29	0.452%	29	0.449%	1.01	29	0.445%	1.01
60-64	14,512	131	0.903%	96	0.664%	1.36	95	0.654%	1.38
65-69	16,392	184	1.122%	167	1.018%	1.10	163	0.997%	1.13
70-74	12,807	283	2.210%	209	1.634%	1.35	205	1.599%	1.38
75-79	9,051	303	3.348%	242	2.674%	1.25	237	2.619%	1.28
80-84	6,576	425	6.463%	299	4.551%	1.42	293	4.457%	1.45
85-89	4,883	432	8.847%	386	7.913%	1.12	378	7.742%	1.14
90-94	2,620	397	15.153%	356	13.600%	1.11	349	13.312%	1.14
95-99	839	206	24.553%	181	21.588%	1.14	178	21.194%	1.16
100+	118	45	38.136%	34	28.440%	1.34	33	28.016%	1.36
Totals	**75,556**	**2,441**	**3.231%**	**2,005**	**2.653%**	**1.22**	**1,964**	**2.600%**	**1.24**
Grand Totals	**155,750**	**4,876**	**3.131%**	**4,057**	**2.605%**	**1.20**	**3,979**	**2.555%**	**1.23**

Graph II(a) – Male



Graph II(a) – Female

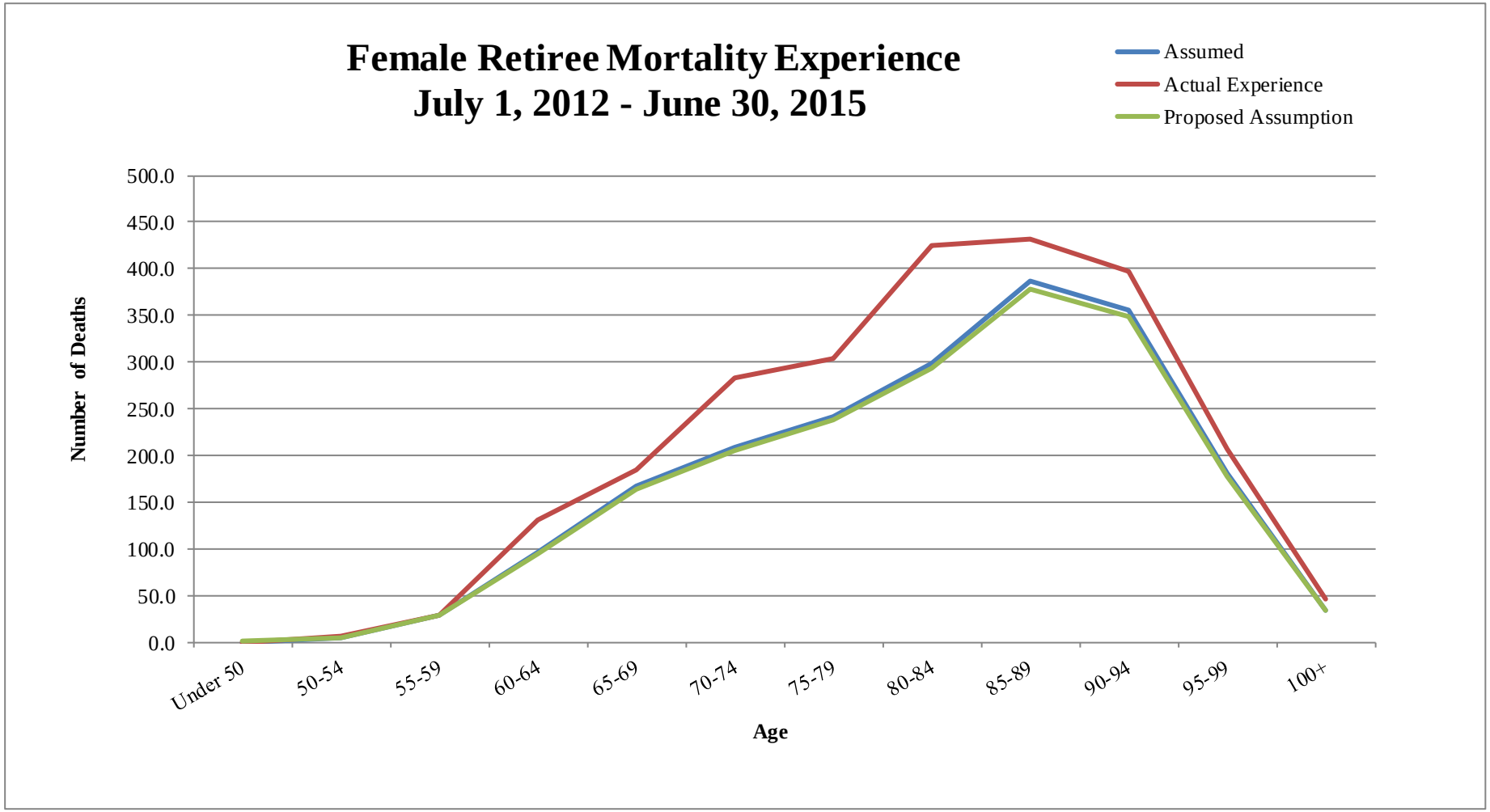
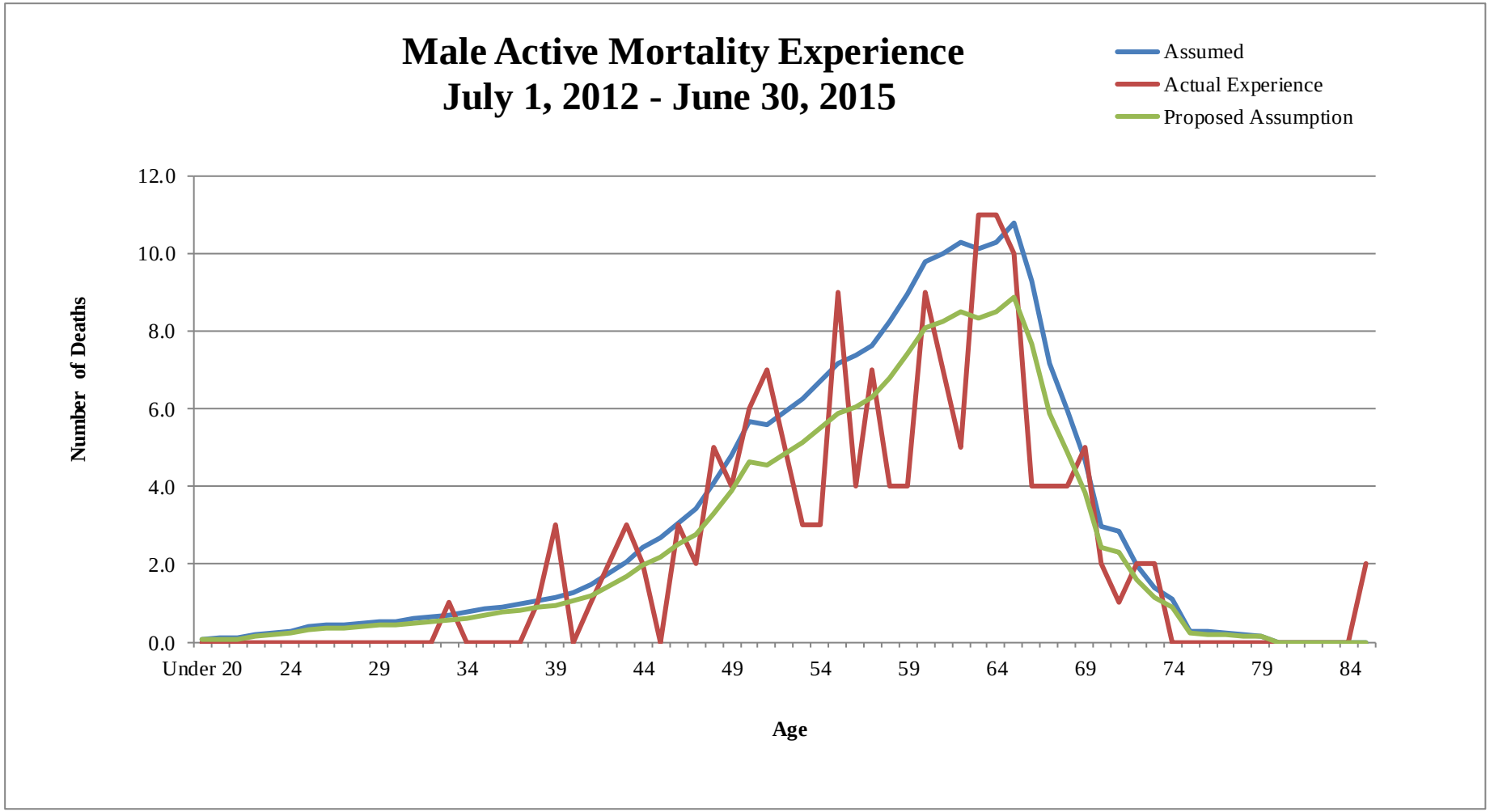


Table II(b)

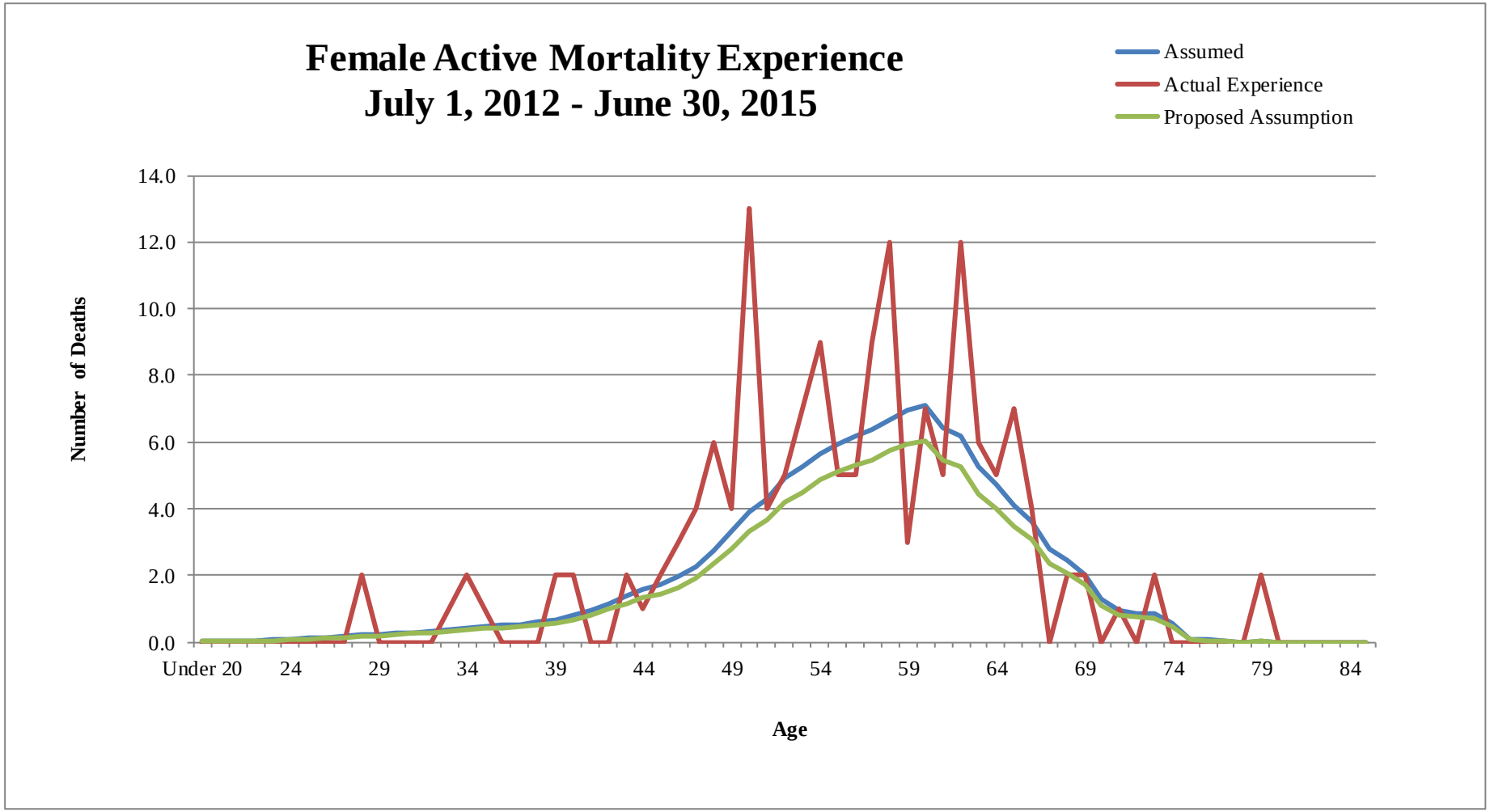
Pre-Retirement Mortality Experience

Male Active Mortality Experience									
	Actual Experience			Current Assumptions			Proposed Assumptions		
Age	Exposures	Deaths	Actual Rate	Expected Deaths	Assumed Rate	Actual / Expected	Expected Deaths	Proposed Rate	Actual / Expected
Under 30	7,681	0	0.000%	3	0.041%	0.00	3	0.034%	0.00
30-39	17,319	5	0.029%	8	0.047%	0.61	7	0.039%	0.74
40-49	29,500	22	0.075%	27	0.092%	0.81	22	0.075%	1.00
50-59	29,023	52	0.179%	70	0.240%	0.75	57	0.197%	0.91
Over 60	14,752	79	0.536%	100	0.676%	0.79	82	0.557%	0.96
Totals	**98,275**	**158**	**0.161%**	**208**	**0.211%**	**0.76**	**170**	**0.173%**	**0.93**
Less than 60	**83,523**	**79**	**0.095%**	**108**	**0.129%**	**0.73**	**88**	**0.106%**	**0.89**
Female Active Mortality Experience									
Age	Exposures	Deaths	Actual Rate	Expected Deaths	Assumed Rate	Actual / Expected	Expected Deaths	Proposed Rate	Actual / Expected
Under 30	5,302	2	0.038%	1	0.020%	1.87	1	0.017%	2.19
30-39	13,838	6	0.043%	4	0.032%	1.36	4	0.027%	1.59
40-49	23,741	24	0.101%	18	0.075%	1.35	15	0.063%	1.60
50-59	31,480	72	0.229%	56	0.178%	1.28	48	0.153%	1.50
Over 60	13,272	55	0.414%	49	0.371%	1.12	42	0.315%	1.32
Totals	**87,633**	**159**	**0.181%**	**129**	**0.147%**	**1.24**	**110**	**0.125%**	**1.45**
Less than 60	**74,361**	**104**	**0.140%**	**79**	**0.107%**	**1.31**	**68**	**0.091%**	**1.53**
Grand Totals	**185,908**	**317**	**0.171%**	**336**	**0.181%**	**0.94**	**280**	**0.151%**	**1.13**
Less than 60	**157,884**	**183**	**0.116%**	**187**	**0.119%**	**0.98**	**156**	**0.099%**	**1.17**

Graph II(b) – Male



Graph II(b) – Female



Unused Sick Leave and Optional Service Purchases

Members who have accumulated unused sick leave and vacation days at retirement are eligible to receive additional service credit to increase their retirement benefits. In addition, members who qualify for optional service may purchase optional service credit prior to retirement. We have reviewed data provided by the System regarding the number of new retirees each year that have either received additional service credit for unused sick leave or have purchased optional service. Based on this analysis, we recommend increasing each current and future active member's service by 4.5 months to reflect additional service credit received at retirement.

Fiscal Year	New Retirees	New Retirees with Unused Sick Leave	New Retirees with No Unused Sick Leave	Total Unused Sick Leave Years	Average Unused Sick Leave Years
2013	3,152	2,182	970	611.646	0.194
2014	3,028	2,174	854	607.500	0.201
2015	3,091	2,235	856	626.708	0.203
Total	9,271	6,591	2,680	1,846	0.199

Percent of New Retirees who Receive Additional Service Due to Unused Sick Leave	**71.09%**
Average Years of Unused Sick Leave for New Retirees During Fiscal Years 2013-2015	**0.1991**
Expected Years of Unused Sick Leave at Retirement for Current and Future Active Members	**0.1416**

Fiscal Year	New Retirees	New Retirees with Optional Service	New Retirees with No Optional Service	Total Optional Service Years	Average Optional Service Years
2013	1,475	1,435	40	349.563	0.237
2014	1,501	1,448	53	353.771	0.236
2015	1,643	1,613	30	371.667	0.226
Total	4,619	4,496	123	1,075.000	0.233

Percent of New Retirees who Purchase Optional Service	**97.34%**
Average Years of Optional Service for New Retirees During Fiscal Years 2013-2015	**0.2330**
Expected Years of Optional Service Purchased at Retirement for Current and Future Active Members	**0.2268**
Total Years Service is Increased	**0.3683**

SECTION III
COST IMPACT

STATE EMPLOYEES' RETIREMENT SYSTEM OF ILLINOIS
COST IMPACT OF RECOMMENDED CHANGES

The impact of adopting the recommended assumptions is summarized in the table below and on the following pages. The results are based on the June 30, 2015, valuation and plan provisions in effect as of June 30, 2015.

		Experience Study		
	Valuation Baseline	7.25% Discount Rate Changing Mortality Tables	7.25% Discount Rate Changing Mortality Tables and all Demographic Assumptions	7.00% Discount Rate Changing Mortality Tables and all Demographic Assumptions
1) Actuarial Liability—Annuitants				
a. Current Benefit Recipients:				
i. Retirement annuities	$ 24,324,233,100	$ 25,452,014,944	$ 25,452,014,944	$ 26,106,013,140
ii. Survivor annuities	1,345,213,022	1,408,387,609	1,408,387,609	1,440,482,381
iii. Disability annuities	482,628,902	509,528,592	516,182,628	543,837,172
b. Eligible for Deferred Benefits				
i. Retirement annuities	9,138,712	9,513,720	9,513,720	9,809,410
ii. Survivor annuities	9,520,904	9,867,343	9,867,343	10,180,018
c. Total	$ 26,170,734,640	$ 27,389,312,208	$ 27,395,966,244	$ 28,110,322,121
2) Actuarial Liability—Inactive Members				
a. Eligible Deferred Vested Pension Benefits	$ 588,747,835	$ 619,426,818	$ 619,426,818	$ 645,641,453
b. Eligible for Return of Contributions Only	36,698,493	36,698,493	36,698,493	36,698,493
c. Total	$ 625,446,328	$ 656,125,311	$ 656,125,311	$ 682,339,946
3) Active Members				
a. Pension Benefits	$ 9,740,991,446	$ 10,117,554,196	$ 10,233,499,847	$ 10,657,689,584
b. Cost-of-Living Adjustments	3,723,376,552	4,165,277,544	4,218,274,206	4,485,043,455
c. Death Benefits	-	-	-	-
i. Occupational	14,273,635	11,517,903	11,486,200	11,890,026
ii. Non-occupational	131,896,597	104,410,081	104,610,016	108,243,187
iii. Refund	25,901,243	24,587,340	25,713,340	25,851,263
iv. Total	$ 172,071,475	$ 140,515,324	$ 141,809,556	$ 145,984,476
d. Withdrawal	310,789,776	324,972,756	328,258,176	348,356,720
e. Total	$ 13,947,229,249	$ 14,748,319,820	$ 14,921,841,785	$ 15,637,074,235
4) Total Actuarial Liability (1 + 2 + 3)	$ 40,743,410,217	$ 42,793,757,339	$ 42,973,933,340	$ 44,429,736,302
5) Market Value of Assets (MVA)	$ 15,258,866,572	$ 15,258,866,572	$ 15,258,866,572	$ 15,258,866,572
6) Unfunded Actuarial Liability Based on MVA (4 – 5)	$ 25,484,543,645	$ 27,534,890,767	$ 27,715,066,768	$ 29,170,869,730
7) Funded Percentage Based on MVA (5 ÷ 4)	37.45%	35.66%	35.51%	34.34%
8) Actuarial Value of Assets (AVA)	$ 14,741,736,065	$ 14,741,736,065	$ 14,741,736,065	$ 14,741,736,065
9) Unfunded Actuarial Liability Based on AVA (4 – 8)	$ 26,001,674,152	$ 28,052,021,274	$ 28,232,197,275	$ 29,688,000,237
10) Funded Percentage Based on AVA (8 ÷ 4)	36.18%	34.45%	34.30%	33.18%
11) Total Normal Cost	$ 908,720,370	$ 958,370,245	$ 944,516,449	$ 989,410,226
12) Employee Contributions	$ 254,103,644	$ 254,103,644	$ 254,103,644	$ 254,103,644
13) Annual Employer Normal Cost	$ 654,616,726	$ 704,266,601	$ 690,412,805	$ 735,306,582
(% payroll)	14.70%	15.81%	15.50%	16.51%

Estimated Impact on the FY 2018 GASB Statements Nos. 67 and 68 Actuarial Determined Contribution and FY 2018 Statutory Contribution

	Valuation Baseline	7.25% Discount Rate Changing Mortality Tables	7.25% Discount Rate Changing Mortality Tables and all Demographic Assumptions	7.00% Discount Rate Changing Mortality Tables and all Demographic Assumptions
1. Employer normal cost for FY 2018	$ 658,500,947	$ 709,888,891	$ 692,930,971	$ 737,597,398
2. Initial amount to amortize the unfunded liability over a 25-year closed period as level percentage of capped payroll	1,768,475,344	1,907,540,365	1,960,217,430	2,012,624,444
3. Estimated FY 2018 ADC [(1) + (2)]	$ 2,426,976,290	$ 2,617,429,256	$ 2,653,148,402	$ 2,750,221,842
4. ADC as a percentage of projected capped payroll	50.245%	54.177%	55.372%	57.398%
5. Estimated FY 2018 statutory contribution	$ 2,056,953,668	$ 2,247,938,550	$ 2,302,911,644	$ 2,380,112,481
6. Estimated statutory contribution as a percentage of projected capped payroll	42.585%	46.529%	48.063%	49.674%
7. Estimated statutory contribution as a percentage of ADC [(5) / (3)]	84.754%	85.883%	86.799%	86.543%

Actuarial Accrued Liability and Actuarial Value of Assets

Determined as of June 30, 2015 [a] [b]

($ in millions)

	Actuarial Accrued Liability				Actuarial Value of Assets			
		Experience Study				Experience Study		
June 30,	Valuation Baseline	7.25% Discount Rate Changing Mortality Tables	7.25% Discount Rate Changing Mortality Tables and all Demographic Assumptions	7.00% Discount Rate Changing Mortality Tables and all Demographic Assumptions	Valuation Baseline	7.25% Discount Rate Changing Mortality Tables	7.25% Discount Rate Changing Mortality Tables and all Demographic Assumptions	7.00% Discount Rate Changing Mortality Tables and all Demographic Assumptions
2016	$ 42,390	$ 44,641	$ 44,818	$ 46,316	$ 16,109	$ 16,110	$ 16,108	$ 16,070
2017	44,024	46,491	46,656	48,195	17,567	17,568	17,559	17,477
2018	45,640	48,340	48,484	50,062	18,886	19,083	19,118	19,066
2019	47,233	50,181	50,294	51,910	19,943	20,353	20,422	20,401
2020	48,790	52,004	52,078	53,728	21,049	21,691	21,783	21,795
2025	55,732	60,512	60,253	62,047	26,260	28,335	28,388	28,576
2030	60,642	67,362	66,591	68,476	30,892	34,875	34,614	35,025
2035	63,526	72,476	71,017	72,957	36,388	42,751	41,859	42,598
2040	64,788	76,092	73,767	75,746	45,046	54,188	52,377	53,598
2045	65,504	79,100	75,747	77,772	58,953	71,190	68,170	69,997

[a] *Based on the plan provisions in effect as of June 30, 2015.*

[b] *State Contribution Based on Public Act 88-0593, Public Act 93-0002, Public Act 94-0004, Public Act 96-0043. The projection results include GOB proceeds and phase-in of deferred asset gains and losses recognized in the projected actuarial value of assets.*

Unfunded Accrued Liability and Funded Ratio

Determined as of June 30, 2015 [a] [b]

($ in millions)

	Unfunded Accrued Liability				Funded Ratio			
		Experience Study				Experience Study		
June 30,	Valuation Baseline	7.25% Discount Rate Changing Mortality Tables	7.25% Discount Rate Changing Mortality Tables and all Demographic Assumptions	7.00% Discount Rate Changing Mortality Tables and all Demographic Assumptions	Valuation Baseline	7.25% Discount Rate Changing Mortality Tables	7.25% Discount Rate Changing Mortality Tables and all Demographic Assumptions	7.00% Discount Rate Changing Mortality Tables and all Demographic Assumptions
2016	$ 26,281	$ 28,531	$ 28,710	$ 30,246	38.00%	36.09%	35.94%	34.70%
2017	26,457	28,923	29,097	30,718	39.90%	37.79%	37.64%	36.26%
2018	26,754	29,257	29,366	30,996	41.38%	39.48%	39.43%	38.08%
2019	27,290	29,828	29,872	31,509	42.22%	40.56%	40.61%	39.30%
2020	27,741	30,313	30,295	31,933	43.14%	41.71%	41.83%	40.57%
2025	29,472	32,177	31,865	33,471	47.12%	46.83%	47.11%	46.06%
2030	29,750	32,487	31,977	33,451	50.94%	51.77%	51.98%	51.15%
2035	27,138	29,725	29,158	30,359	57.28%	58.99%	58.94%	58.39%
2040	19,742	21,904	21,390	22,148	69.53%	71.21%	71.00%	70.76%
2045	6,551	7,910	7,577	7,775	90.00%	90.00%	90.00%	90.00%

[a] *Based on the plan provisions in effect as of June 30, 2015.*

[b] *State Contribution Based on Public Act 88-0593, Public Act 93-0002, Public Act 94-0004, Public Act 96-0043. The projection results include GOB proceeds and phase-in of deferred asset gains and losses recognized in the projected actuarial value of assets.*

Required State Contribution
Determined as of June 30, 2015 [a, b]
($ in millions)

	Contribution Dollar				Contribution Percent			
		Experience Study				Experience Study		
Fiscal Year	Valuation Baseline	7.25% Discount Rate Changing Mortality Tables	7.25% Discount Rate Changing Mortality Tables and all Demographic Assumptions	7.00% Discount Rate Changing Mortality Tables and all Demographic Assumptions	Valuation Baseline	7.25% Discount Rate Changing Mortality Tables	7.25% Discount Rate Changing Mortality Tables and all Demographic Assumptions	7.00% Discount Rate Changing Mortality Tables and all Demographic Assumptions
2016	$ 2,045	$ 2,045	$ 2,045	$ 2,045	43.88%	43.88%	43.88%	43.88%
2017	2,014	2,014	2,014	2,014	42.81%	42.80%	42.99%	42.99%
2018	2,057	2,248	2,303	2,380	42.58%	46.53%	48.06%	49.67%
2019	2,091	2,288	2,334	2,413	42.18%	46.12%	47.63%	49.26%
2020	2,130	2,332	2,369	2,451	41.88%	45.82%	47.31%	48.94%
2025	2,405	2,636	2,628	2,719	41.57%	45.51%	46.95%	48.57%
2030	2,751	3,016	2,960	3,063	41.41%	45.36%	46.74%	48.37%
2035	3,414	3,719	3,622	3,751	44.49%	48.44%	49.97%	51.75%
2040	3,894	4,242	4,117	4,263	44.49%	48.44%	49.97%	51.75%
2045	4,396	4,789	4,636	4,801	44.49%	48.44%	49.97%	51.75%
Total Cont. Through 2045	$ 89,809	$ 97,714	$ 96,032	$ 99,261				
Present Value of Total Cont.	$ 32,389	$ 35,061	$ 34,793	$ 36,896				

[a] *Based on the plan provisions in effect as of June 30, 2015.*

[b] *State Contribution Based on Public Act 88-0593, Public Act 93-0002, Public Act 94-0004, Public Act 96-0043. The projection results include GOB proceeds and phase-in of deferred asset gains and losses recognized in the projected actuarial value of assets.*

SECTION IV

RECOMMENDED ASSUMPTIONS

Actuarial Methods and Assumptions

Actuarial Cost Method as Mandated by 40 ILCS 5/14-131, Adopted June 30, 1989

The projected unit credit normal cost method is used. Under this method, the projected pension at retirement age is first calculated and the value thereof at the individual member's current or attained age is determined. The normal cost for the member for the current year is equal to the value so determined divided by the member's projected service at retirement. The normal cost for the plan for the year is the sum of the individual normal costs.

The actuarial liability at any point in time is the value of the projected pensions at that time less the value of future normal costs.

For ancillary benefits for active members, in particular death and survivor benefits, termination benefits, and the postretirement increases, the same procedure as outlined above is followed.

Estimated annual administrative expenses are added to the normal cost.

For valuation purposes, as well as projection purposes, an actuarial value of assets is used.

Proposed Actuarial Assumptions to be Adopted for the June 30, 2016, Valuation

Mortality

Post-Retirement Mortality

105 percent of the RP-2014 Healthy Annuitant mortality table, sex distinct, with generational mortality improvement using MP-2014 2-dimensional mortality improvement scales recently released by the SOA. This assumption provides a margin for mortality improvements. No adjustment is made for post-disabled mortality.

Pre-Retirement Mortality, including terminated vested members prior to attaining age 50

Based on a percentage of 75 percent for males and 90 percent for females of the RP-2014 Total Employee mortality table with generation mortality improvement using MP-2014 2-dimensional mortality improvement scales recently released by the SOA, to reflect that experience shows active members having lower mortality rates than retirees of the same age. Five percent of deaths among active employees are assumed to be in the performance of their duty.

Interest

7.00 percent per annum, compounded annually.

General Inflation

2.75 percent per annum, compounded annually.

This assumption serves as the basis for the determination of Tier Two pay cap growth and annual increases that are equal to the lesser of 3.0 percent or one-half the annual increase in the consumer price index-u during the preceding 12-month calendar year.

Marriage Assumption

85.0 percent of active male participants and 65.0 percent of active female participants are assumed to be married. Actual marital status at benefit commencement is used for retirees.

Social Security Offset for Survivor Benefits

No offset assumption for male surviving spouses because it is assumed their own PIA is as great as their spouses' PIA. Sixty percent of married male members are assumed to have a dual income household. For the dual income household, it is assumed the offset at age 60 is 45.0

percent of the original survivor benefit. It is assumed the offset at age 62 is 10.0 percent of the original survivor benefit. Furthermore, it is assumed that 50 percent of retirees on or after July 1, 2009, will elect to remove the offset provision. In exchange for the removal, the member's retirement annuity is reduced by 3.825 percent monthly as mandated by Statutes.

Termination

Illustrative rates of withdrawal from the plan are as follows for Tier One Members:

Service Based Withdrawal				
	Regular Formula Employees		Alternate Formula Employees	
Service (Beginning of Year)	Males	Females	Males	Females
0	0.2300	0.2300	0.0325	0.0600
1	0.1200	0.1200	0.0325	0.0450
2	0.0950	0.0850	0.0325	0.0450
3	0.0700	0.0650	0.0200	0.0400
4	0.0625	0.0500	0.0175	0.0300
5	0.0425	0.0475	0.0175	0.0300
6	0.0425	0.0350	0.0175	0.0300
7	0.0350	0.0350	0.0175	0.0200
8	0.0300	0.0300	0.0150	0.0200
9	0.0250	0.0250	0.0150	0.0200
10	0.0250	0.0250	0.0150	0.0200
11	0.0200	0.0200	0.0125	0.0175
12	0.0200	0.0200	0.0125	0.0175
13	0.0200	0.0200	0.0100	0.0150
14	0.0150	0.0150	0.0100	0.0150
15	0.0150	0.0150	0.0100	0.0150
16	0.0150	0.0150	0.0100	0.0150
17	0.0150	0.0150	0.0100	0.0150
18	0.0150	0.0150	0.0100	0.0150
19	0.0150	0.0150	0.0100	0.0150
20	0.0150	0.0100	0.0100	0.0150
21	0.0150	0.0100	0.0100	0.0150
22	0.0150	0.0100	0.0100	0.0150
23	0.0150	0.0100	0.0100	0.0150
24	0.0150	0.0100	0.0100	0.0150
25	0.0150	0.0100	0.0100	0.0150
26	0.0150	0.0100	0.0100	0.0150
27	0.0150	0.0100	0.0100	0.0150
28	0.0150	0.0100	0.0100	0.0150
29	0.0150	0.0100	0.0100	0.0150
30+	0.0150	0.0100	0.0100	0.0150

It is assumed that terminated employees will not be rehired. The rates apply only to employees who have not fulfilled the service requirement necessary for retirement at any given age.

Salary Increases

Illustrative rates of increase per individual employee per annum, compounded annually:

Age	Annual Increase
25	7.67%
30	6.20%
35	5.30%
40	4.97%
45	4.58%
50	4.26%
55	4.05%
60	3.85%
65	3.47%
70	3.25%

These increases include a component for inflation of 2.75 percent per annum.

Disability

Because members who receive disability benefits typically spend less than one year on disability, they are considered active members. Therefore a load of 1.63 percent of pay on the normal cost is applied to reflect the near-term cash flow. This assumption is based on 110 percent of the most recent disability benefit payment information as a percent of payroll and will be updated at each valuation date as experience emerges.

415(b) and 401(a)(17) Limits

No explicit assumption is made with respect to these items.

Population Projection

For purposes of determining annual appropriation as a percent of total covered payroll, the size of the active group is assumed to remain level at the number of actives as of the valuation date. New entrants are assumed to enter with an average age and an average pay as disclosed below. New entrants are assumed to have the same demographic profile as new entrants in the 15 years prior to the valuation date. The average increase in uncapped payroll for the projection period is 3.25 percent per annum.

Age Group	New Entrant Benefit Groups: New Entrants Eligible for Regular Formula Benefits that are Covered by Social Security		New Entrants Eligible for Regular Formula Benefits that are not Covered by Social Security		New Entrants in Positions Formerly Eligible for Alternate Formula Benefits that are Covered by Social Security that are now Eligible for Regular Formula Benefits		New Entrants Eligible for Alternate Formula Benefits that are Covered by Social Security		New Entrants in Positions Formerly Eligible for Alternate Formula Benefits that are not Covered by Social Security that are now Eligible for Regular Formula Benefits		New Entrants Eligible for Alternate Formula Benefits that are not Covered by Social Security		Total	
	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary	No.	Salary
Under 20	80	2,358,446			14	690,023	17	780,785			1	36,934	112	3,866,188
20-24	2,182	85,476,855	8	289,273	587	29,624,728	843	42,684,464	218	13,929,071	73	4,422,404	3,911	176,426,795
25-29	3,788	171,209,790	28	1,507,166	814	42,939,907	1,016	55,143,162	355	23,295,236	129	8,107,343	6,130	302,202,604
30-34	3,359	166,218,047	27	1,519,642	571	32,634,270	766	44,917,258	169	11,839,114	60	4,055,243	4,952	261,183,574
35-39	2,912	152,253,060	8	409,630	454	26,583,379	563	34,534,786	73	5,046,495	17	1,209,947	4,027	220,037,297
40-44	2,856	154,770,274	15	827,662	431	25,834,477	417	26,931,594	29	2,125,886	2	125,244	3,750	210,615,137
45-49	2,350	129,772,966	12	726,104	317	19,072,924	285	19,364,613	14	906,632	3	214,488	2,981	170,057,727
50-54	1,962	108,959,941	7	433,206	231	14,816,904	155	10,787,405	11	798,398	1	50,964	2,367	135,846,818
55-59	1,234	67,843,687	10	644,644	137	8,846,704	53	3,537,563	8	593,711			1,442	81,466,309
60-64	432	22,392,766	3	223,522	44	2,863,177	15	1,148,446	3	234,394			497	26,862,305
65-69	38	2,264,329			4	261,762	1	77,852					43	2,603,943
70 & Over														
Total	21,193	$1,063,520,161	118	$ 6,580,849	3,604	$ 204,168,255	4,131	$ 239,907,928	880	$ 58,768,937	286	$ 18,222,567	30,212	$1,591,168,697
Avg. Salary		$ 50,183		$ 55,770		$ 56,650		$ 58,075		$ 66,783		$ 63,715		$ 52,667
Avg. Age		37.69		37.57		34.95		32.52		29.21		27.83		36.31
Percent Male		43%		73%		78%		75%		91%		84%		53%

Retirement

Employees are assumed to retire in accordance with the rates shown below. The rates apply only to employees who have fulfilled the service requirement necessary for retirement at any given age.

Retirement Rates for Regular Formula Employees		
	Males	Females
50	15.00%	25.00%
51	15.00%	25.00%
52	25.00%	30.00%
53	25.00%	25.00%
54	20.00%	20.00%
55	17.50%	16.00%
56	17.50%	16.00%
57	15.00%	16.00%
58	15.00%	16.00%
59	15.00%	16.00%
60	10.00%	16.00%
61	10.00%	12.50%
62	20.00%	20.00%
63	17.50%	17.50%
64	15.00%	17.50%
65	20.00%	25.00%
66	25.00%	20.00%
67	20.00%	20.00%
68	20.00%	20.00%
69	17.50%	20.00%
70	17.50%	20.00%
71	17.50%	15.00%
72	15.00%	20.00%
73	17.50%	20.00%
74	20.00%	20.00%
75	100.00%	100.00%

Early Retirement Rates for Regular Formula Employees		
Age	Males	Females
55	4.50%	4.50%
56	6.00%	4.00%
57	5.00%	7.00%
58	7.50%	9.50%
59	9.50%	12.00%

Retirement Rates for Alternate Formula Employees				
	Eligible for Alternate Formula Benefits Only		Eligible for Regular Formula Benefits Only	
Age	Males	Females	Males	Females
50	60.00%	40.00%	N/A	N/A
51	45.00%	40.00%	N/A	N/A
52	45.00%	35.00%	N/A	N/A
53	40.00%	30.00%	N/A	N/A
54	40.00%	25.00%	N/A	N/A
55	35.00%	30.00%	N/A	N/A
56	35.00%	25.00%	N/A	N/A
57	27.50%	20.00%	N/A	N/A
58	30.00%	20.00%	N/A	N/A
59	25.00%	25.00%	N/A	N/A
60	30.00%	30.00%	5.00%	8.00%
61	25.00%	20.00%	5.00%	8.00%
62	45.00%	45.00%	10.00%	8.00%
63	40.00%	35.00%	10.00%	12.50%
64	30.00%	40.00%	10.00%	12.50%
65	55.00%	40.00%	20.00%	17.50%
66	50.00%	60.00%	20.00%	15.00%
67	50.00%	50.00%	20.00%	40.00%
68	30.00%	15.00%	17.50%	30.00%
69	35.00%	35.00%	17.50%	20.00%
70	50.00%	60.00%	17.50%	25.00%
71	30.00%	50.00%	17.50%	30.00%
72	100.00%	100.00%	100.00%	100.00%

Assets

Assets available for benefits are used as described on page 46 of the most recent actuarial valuation report. The asset valuation method is prescribed by statute, and does not appear to allow a corridor; therefore, a corridor has not been established.

Expenses

As estimated and advised by SERS staff, based on current expenses and are expected to increase in relation to the projected capped payroll.

Spouse's Age

The female spouse is assumed to be three years younger than the male spouse.

Children

It is assumed that married members have 2.2 children, one year apart in age.

The age of the youngest child of a deceased employee at his date of death is assumed to be as follows:

Age at Death of Employee	Age of Youngest Child	Age at Death of Employee	Age of Youngest Child
20	2	40	6
25	3	45	8
30	4	50	10
35	5	55	12
		60	14

Overtime and Shift Differentials

Reported earnings include base pay alone. It is assumed that overtime and shift differentials will increase total payroll by 3.5 percent over reported earnings.

Load for Inactive Members Eligible for Deferred Vested Pension Benefits

Deferred vested liability is increased by 15 percent to account for increase in final average salary due to participation in a reciprocal system.

Unused Sick Leave and Optional Service Purchases

Current and future active member's service is increased 4.5 months to account for increases of service at retirement due to converting unused sick leave and vacation days and purchasing applicable optional service.

Missing Data

If year-to-date earnings were not available, then the monthly pay rate is used. If both year-to-date earnings and the monthly pay rate are not available, the annual rate of pay is assumed to be the rate of pay for the population as a whole on the valuation date. For members with less than a year of service, the annual rate of pay is based on the greater of year-to-date earnings or annualized pay rate. If a birth date was not available, the member was assumed to be age 35.

Decrement Timing

All decrements are assumed to occur mid-year.

Decrement Relativity

Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

Decrement Operation

Disability and turnover decrements do not operate after member reaches retirement eligibility.

Eligibility Testing

Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.

Assumptions as a result of Public Act 96-0889 Adopted June 30, 2014

Members hired after December 31, 2010, are assumed to make contributions on salary up to the final average compensation cap in a given year until this plan provision or administrative procedure is clarified.

State contributions, expressed as a percentage of pay, are calculated based upon capped pay.

Members hired after December 31, 2010, eligible for the regular formula benefits will retire according to the following age-based retirement rates:

Retirement Rates for Regular Formula Employees			
Age	Employees Eligible For Normal Retirement	Age	Employees Eligible For Early Retirement
67	50.00%	62	30.00%
68	35.00%	63	15.00%
69	35.00%	64	15.00%
70	35.00%	65	15.00%
71	20.00%	66	15.00%
72	20.00%		
73	20.00%		
74	20.00%		
75	100.00%		

Members hired after December 31, 2010, eligible for the alternate formula benefits will retire according to the following age-based retirement rates:

Retirement Rates for Alternate Formula Employees		
Age	Males	Females
60	50.00%	50.00%
61	25.00%	20.00%
62	45.00%	45.00%
63	40.00%	35.00%
64	30.00%	40.00%
65	55.00%	40.00%
66	50.00%	60.00%
67	50.00%	50.00%
68	30.00%	15.00%
69	35.00%	35.00%
70	50.00%	60.00%
71	30.00%	50.00%
72	100.00%	100.00%

Illustrative rates of withdrawal from the plan are as follows for members hired after December 31, 2010:

Service Based Withdrawal				
	Regular Formula Employees		Alternate Formula Employees	
Service (Beginning of Year)	Males	Females	Males	Females
0	0.2300	0.2300	0.0325	0.0600
1	0.1200	0.1200	0.0325	0.0450
2	0.0950	0.0850	0.0325	0.0450
3	0.0700	0.0650	0.0200	0.0400
4	0.0625	0.0500	0.0175	0.0300
5	0.0425	0.0475	0.0175	0.0300
6	0.0425	0.0350	0.0175	0.0300
7	0.0350	0.0350	0.0175	0.0200
8	0.0300	0.0300	0.0150	0.0200
9	0.0250	0.0250	0.0150	0.0200
10	0.0250	0.0250	0.0150	0.0200
11	0.0200	0.0200	0.0125	0.0175
12	0.0200	0.0200	0.0125	0.0175
13	0.0200	0.0200	0.0100	0.0150
14	0.0150	0.0150	0.0100	0.0150
15	0.0150	0.0150	0.0100	0.0150
16	0.0150	0.0150	0.0100	0.0150
17	0.0150	0.0150	0.0100	0.0150
18	0.0150	0.0150	0.0100	0.0150
19	0.0150	0.0150	0.0100	0.0150
20	0.0150	0.0100	0.0100	0.0150
21	0.0150	0.0100	0.0100	0.0150
22	0.0150	0.0100	0.0100	0.0150
23	0.0150	0.0100	0.0100	0.0150
24	0.0150	0.0100	0.0100	0.0150
25	0.0150	0.0100	0.0100	0.0150
26	0.0150	0.0100	0.0100	0.0150
27	0.0150	0.0100	0.0100	0.0150
28	0.0150	0.0100	0.0100	0.0150
29	0.0150	0.0100	0.0100	0.0150
30+	0.0150	0.0100	0.0100	0.0150

Projection Methodology Adopted June 30, 2005, and Amended June 30, 2009

Appropriation Requirements Under P.A. 93-0002, P.A. 94-0004 and P.A. 96-0043

State Contributions under P.A. 93-0002

In general, for each year during the life of the GOB program, the state contributions to the System are to be calculated as follows:

1. Calculation of the contribution maximum
    a. A projection of contributions will be made from the valuation date to June 30, 2045. Such projection will be based on hypothetical asset values determined using the following assumptions:
        i) That the System had received no portion of the general obligation bond proceeds in excess of the scheduled contributions for the remainder of fiscal 2003 and for the entirety of 2004,
        ii) That hypothetical state contributions had been made each fiscal year from 2005 through the valuation date, based on the funding process in place prior to P.A. 93-0002 (without regard to prior state minimum requirements),
        iii) That the actual amounts of member contributions and the actual cash outflows (benefit payments, refunds and administrative expenses) for each year prior to the valuation date were realized, and
        iv) That the hypothetical fund earned returns in each prior fiscal year equal to the rate of total return actually earned by the retirement fund in that year.
    b. The hypothetical asset values developed in a., above, will not exceed the actual assets of the fund.
    c. A projection of maximum contributions for each year of the GOB program will be performed each year, by reducing the contributions produced in a., above, by the respective amount of debt service allocated to the System for each year.
2. Calculation of the contribution with GOB proceeds
    a. The basic projection of state contributions from the valuation date through June 30, 2045, will be made, taking into account all assets of the System, including the GOB proceeds.
    b. State contribution rates (expressed as a percentage of covered pay), in the pattern required by the funding sections of the statutes, are calculated.
    c. In those projections, the dollars of state contributions which are added to assets each year during the GOB program are limited by the contribution maximum. Because the bonds are to be liquidated by the end of fiscal 2033, there is no contribution maximum thereafter.

State Contributions under P.A. 94-0004

The following is an excerpt from the Illinois Compiled statutes 40 ILCS 5/14-108.3 (f)-(g):

> (f) The System shall determine the amount of the increase in the present value of future benefits resulting from the granting of early retirement incentives under this Section and shall report that amount to the Governor and the Commission on Government Forecasting and Accountability on or after the effective date of this amendatory Act of the 93rd General Assembly and on or before November 15, 2004. Beginning with State fiscal year 2008, the increase reported under this subsection (f) shall be included in the calculation of the required State contribution under Section 14-131.
>
> (g) In addition to the contributions otherwise required under this Article, the State shall appropriate and pay to the System an amount equal to $70,000,000 in State fiscal years 2004 and 2005.

State Contributions under P.A. 96-0043

The following is an excerpt from the Illinois Compiled statutes 40 ILCS 5/14-131:

> (g) For purposes of determining the required State contribution to the System, the value of the System's assets shall be equal to the actuarial value of the System's assets, which shall be calculated as follows:
>
> > As of June 30, 2008, the actuarial value of the System's assets shall be equal to the market value of the assets as of that date. In determining the actuarial value of the System's assets for fiscal years after June 30, 2008, any actuarial gains or losses from investment return incurred in a fiscal year shall be recognized in equal annual amounts over the five-year period following that fiscal year.
>
> (h) For purposes of determining the required State contribution to the System for a particular year, the actuarial value of assets shall be assumed to earn a rate of return equal to the System's actuarially assumed rate of return.

Following the above legislation we have calculated the required contribution and the results are shown in the summary section of this report.